

**IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE**

ALIGN TECHNOLOGY, INC.,)	
)	
)	
Plaintiff,)	
)	
v.)	C.A. No. 1:18-cv-01949-LPS-CJB
)	
3SHAPE A/S, 3SHAPE TRIOS A/S,)	
3SHAPE INC., and 3SHAPE)	
MANUFACTURING US, LLC)	
)	
Defendant.)	

**3SHAPE A/S, 3SHAPE TRIOS A/S, AND 3SHAPE, INC.’S ANSWER, AFFIRMATIVE
DEFENSES, AND COUNTERCLAIMS TO THE SECOND AMENDED COMPLAINT**

Defendants 3Shape A/S, 3Shape Trios A/S, 3Shape, Inc., and 3Shape Manufacturing US, LLC (collectively, “Defendants” or “3Shape”), hereby answer Plaintiff Align Technology, Inc.’s (“Align” or “Plaintiff”) Second Amended Complaint (the “Amended Complaint”), and present their affirmative defenses and counterclaims. 3Shape denies all allegations in Align’s Amended Complaint unless expressly admitted. Any admissions herein are for purposes of this matter only. 3Shape reserves the right to take further positions and raise additional defenses that may become apparent as a result of additional information discovered subsequent to filing this Answer.

THE PARTIES¹

1. Align is a Delaware corporation incorporated in April 1997, with its principal place of business in San Jose, California.

¹ 3Shape adopts the headings from Align’s Amended Complaint for ease of cross-referencing only. Unless expressly admitted herein, 3Shape denies any and all allegations expressed or implied by Align’s headings.

RESPONSE: Denied, except Defendants admit upon information and belief that Align is a Delaware Corporation with its principal place of business in San Jose, California.

2. On information and belief, 3Shape A/S (“3Shape A/S”) is a Danish corporation with a principal place of business at Holmens Kanal 7, 1060 Copenhagen K, Denmark.

RESPONSE: Defendants admit that 3Shape A/S is a Danish corporation with principal place of business at Holmens Kanal 7, 1060 Copenhagen K, Denmark.

3. On information and belief, 3Shape TRIOS A/S (“3Shape TRIOS A/S”) is a Danish corporation with a principal place of business at Holmens Kanal 7, 1060 Copenhagen K, Denmark.

RESPONSE: Defendants admit that 3Shape TRIOS A/S is a Danish corporation with principal place of business at Holmens Kanal 7, 1060 Copenhagen K, Denmark.

4. On information and belief, 3Shape Inc. (“3Shape US”) is a Delaware corporation with a principal place of business at 10 Independence Boulevard, Suite 150, Warren, New Jersey 07059.

RESPONSE: Defendants admit that 3Shape Inc. is a Delaware corporation with a principal place of business at 10 Independence Boulevard, Suite 150, Warren, New Jersey 07059.

5. On information and belief, 3Shape Manufacturing US, LLC is a Delaware corporation with a principal place of business at 10 Independence Boulevard, Suite 150, Warren, New Jersey 07059.

RESPONSE: Defendants admit that 3Shape Manufacturing US, LLC is a Delaware corporation. Defendants deny that 3Shape Manufacturing US, LLC has a principal place of business at 10 Independence Boulevard, Suite 150, Warren, New Jersey 07059.

6. On information and belief, 3Shape A/S, 3Shape TRIOS A/S, and 3Shape US, are related sister companies, and 3Shape Manufacturing US, LLC is also a related company, all of which are commonly held by the same holding company, 3Shape Holding A/S.

RESPONSE: Defendants admit that 3Shape A/S, 3Shape TRIOS A/S, and 3Shape, Inc. are sister companies, and 3Shape Manufacturing US, LLC is a related company. Defendants admit that 3Shape A/S, 3Shape TRIOS A/S, and 3Shape, Inc. are each direct subsidiaries of 3Shape

Holding A/S, but deny that 3Shape Manufacturing US, LLC is a direct subsidiary of 3Shape Holding A/S. To the extent there are any remaining allegations in paragraph 6 not addressed by the foregoing, Defendants deny them.

7. 3Shape is intentionally disregarding Align's patent rights. Align and 3Shape compete in the digital dentistry industry. That is, both companies sell devices that obtain digital models of a patient's teeth and software for improving, understanding, and manipulating those models to improve a patient's dental and orthodontic treatment plan. Align is a leader in the digital dentistry industry; 3Shape is a follower. Align has developed and acquired patents on key digital dentistry technology; 3Shape saw Align's patented technology and copied it. Align has suffered and continues to suffer significant injury because of 3Shape's willful patent infringement. Align brings this complaint to hold 3Shape responsible for its infringement and to protect its intellectual property rights.

RESPONSE: Defendants deny all allegations in paragraph 7, except Defendants admit that 3Shape's TRIOS and Align's iTero scanners compete against each other in the market for scanners for orthodontic treatment.

JURISDICTION AND VENUE

8. This lawsuit is an action for patent infringement arising under the patent laws of the United States, Title 35 of the United States Code.

RESPONSE: This paragraph contains legal conclusions to which no response is required. To the extent any response is required, Defendants admit that Plaintiff purports to bring this action under the patent laws of the United States, pursuant to Title 35 of the United States Code. To the extent there are any remaining allegations in paragraph 8 not addressed by the foregoing, Defendants deny them.

9. This Court has subject matter jurisdiction over this action pursuant to 28 U.S.C. §§ 1331 and 1338(a).

RESPONSE: This paragraph contains legal conclusions to which no response is required. To the extent any response is required, Defendants admit that this Court has subject matter jurisdiction over actions arising under 28 U.S.C. §§ 1331 and 1338, but deny that Plaintiff is entitled to any relief thereunder, and deny all remaining allegations in paragraph 9.

10. This Court has personal jurisdiction over Defendants in that they have, directly or through agents and/or intermediaries, committed acts within Delaware giving rise to this action and/or have established minimum contacts with Delaware such that the exercise of jurisdiction would not offend traditional notions of fair play and justice.

RESPONSE: This paragraph contains legal conclusions to which no response is required. To the extent any response is required, Defendants are not contesting jurisdiction or venue in the United States District Court for the District of Delaware for the limited purpose of this civil action only, as to the currently named Defendants only. To the extent there are any remaining allegations in paragraph 10 not addressed by the foregoing, Defendants deny them.

11. On information and belief, Defendants regularly conduct business in Delaware, and purposefully availed themselves of the privileges of conducting business in Delaware. In particular, on information and belief, Defendants, directly and/or through their agents and/or intermediaries, make, use, import, offer for sale, sell, and/or advertise their products and affiliated services in Delaware. Defendants have placed, and continue to place, infringing products into the stream of commerce, via an established distribution channel, with the knowledge and/or understanding that such products are sold in the United States including in Delaware and specifically including this District.

RESPONSE: Denied.

12. On information and belief, Defendants have derived substantial revenue from their infringing activity occurring with the State of Delaware and within this District and/or should reasonably expect their actions to have consequences in Delaware. In addition, Defendants have, and continue to, knowingly induce infringement within this District by advertising, marketing, offering for sale and/or selling devices containing infringing functionality within this District to at least resellers, distributors, customers, dentists, orthodontists, dental and orthodontic labs, and/or other end users, and by providing instructions, user manuals, in person and online training, advertising and/or marketing materials which facilitate, direct or encourage the use of infringing functionality with knowledge thereof.

RESPONSE: Denied.

13. Defendants have committed patent infringement in Delaware that has led to foreseeable harm and injury to Align, a Delaware corporation.

RESPONSE: Denied.

14. Additionally, 3Shape A/S and 3Shape TRIOS A/S are subject to jurisdiction in the United States, and specifically in Delaware, pursuant to FED. R. CIV. P. 4(k)(2). 3Shape A/S and 3Shape TRIOS A/S have contacts with the United States that include, *inter alia*, advertising,

offering to sell, and/or selling their products and software throughout the United States, including Delaware and this District.

RESPONSE: This paragraph contains legal conclusions to which no response is required. To the extent any response is required, 3Shape A/S and 3Shape TRIOS A/S are not contesting jurisdiction or venue in the United States District Court for the District of Delaware for the limited purpose of this civil action only. To the extent there are any remaining allegations in paragraph 14 not addressed by the foregoing, Defendants deny them.

15. This Court also has personal jurisdiction over 3Shape US and 3Shape Manufacturing US, LLC because 3Shape US and 3Shape Manufacturing US, LLC are Delaware corporations and thus resides within, and have consented to personal jurisdiction within, this District.

RESPONSE: This paragraph contains legal conclusions to which no response is required. To the extent any response is required, 3Shape Inc. and 3Shape Manufacturing US, LLC are not contesting jurisdiction or venue in the United States District Court for the District of Delaware for the limited purpose of this civil action only. To the extent there are any remaining allegations in paragraph 15 not addressed by the foregoing, Defendants deny them.

16. The Court further has personal jurisdiction over 3Shape US and 3Shape Manufacturing US, LLC because 3Shape US and 3Shape Manufacturing US, LLC have committed, or aided, abetted, contributed, and/or participated in the commission of tortious acts of patent infringement that have led to foreseeable harm and injury to Align, which is a corporation organized and existing under the laws of the State of Delaware. Likewise, 3Shape A/S and 3Shape TRIOS A/S alone and/or in concert with 3Shape US, and 3Shape Manufacturing US, LLC, or others, have committed, or aided, abetted, contributed, and/or participated in the commission of tortious acts of patent infringement that have led to foreseeable harm and injury to Align.

RESPONSE: Denied.

17. Venue is proper pursuant to 28 U.S.C. §§ 1391 and 1400(b).

RESPONSE: This paragraph contains legal conclusions to which no response is required. To the extent any response is required, Defendants are not contesting venue in the United States District Court for the District of Delaware for the limited purpose of this civil action only, as to

the currently named Defendants only. To the extent there are any remaining allegations in paragraph 17 not addressed by the foregoing, Defendants deny them.

THE PATENTS-IN-SUIT

18. On December 19, 2017, the U.S. Patent and Trademark Office duly and lawfully issued U.S. Patent No. 9,844,420 (“the ’420 patent”), entitled “System and Method for Positioning Three-Dimensional Brackets on Teeth” naming Ka Man Cheang as the inventor. Align is the owner by assignment of all right, title and interest in the ’420 patent and has exclusive right to bring suit to enforce the patent. Evidence of such assignment has been recorded with the U.S. Patent and Trademark Office at Reel/Frame 018418/0912. A true and correct copy of the ’420 patent is attached hereto as **Exhibit 1** to this complaint.

RESPONSE: Defendants admit U.S. Patent No. 9,844,420 (“the ’420 patent”) states that it issued on December 19, 2017. The ’420 patent is entitled “System and Method for Positioning Three-Dimensional Brackets on Teeth” and names Ka Man Cheang as an inventor. To the extent there are any remaining allegations in paragraph 18 not addressed by the foregoing, Defendants deny them.

19. On June 13, 2017, the U.S. Patent and Trademark Office duly and lawfully issued U.S. Patent No. 9,675,430 (“the ’430 patent”), entitled “Confocal Imaging Apparatus with Curved Focal Surface” naming Tal Verker, Adi Levin, Ofer Saphier, and Maayan Moshe as the inventors. Align is the owner by assignment of all right, title and interest in the ’430 patent and has exclusive right to bring suit to enforce the patent. Evidence of such assignment has been recorded with the U.S. Patent and Trademark Office at Reel/Frame 036430/0819. The claims of the ’430 patent are valid and enforceable. A true and correct copy of the ’430 patent is attached hereto as **Exhibit 2** to this complaint.

RESPONSE: Defendants admit that U.S. Patent No. 9,675,430 (“the ’430 patent”) states that it issued on June 13, 2017. The ’430 patent is entitled “Confocal Imaging Apparatus with Curved Focal Surface” and names Tal Verker, Adi Levin, Ofer Saphier, and Maayan Moshe as inventors. To the extent there are any remaining allegations in paragraph 19 not addressed by the foregoing, Defendants deny them.

20. On May 22, 2018, the U.S. Patent and Trademark Office duly and lawfully issued U.S. Patent No. 9,975,294 (“the ’294 patent”), entitled “Method for Preparing a Physical Plaster Model” naming Eldad Taub and Avi Kopelman as the inventors. Align is the owner by assignment of all right, title and interest in the ’294 patent and has exclusive right to bring suit to enforce the

patent. Evidence of such assignment has been recorded with the U.S. Patent and Trademark Office at Reel/Frame 034483/0930. A true and correct copy of the '294 patent is attached hereto as **Exhibit 3** to this complaint.

RESPONSE: Defendants admit that U.S. Patent No. 9,975,294 (“the ’294 patent”) states that it issued on May 22, 2018. The ’294 patent is entitled “Method for Preparing a Physical Plaster Model” and names Eldad Taub and Avi Kopelman as inventors. To the extent there are any remaining allegations in paragraph 20 not addressed by the foregoing, Defendants deny them.

21. On December 17, 2019, the U.S. Patent and Trademark Office duly and lawfully issued U.S. Patent No. 10,507,088 (“the ’088 patent”), entitled “Imaging Apparatus with Simplified Optical Design” naming Tal Verker, Adi Levin, Ofer Saphier, and Maayan Moshe as the inventors. Align is the owner by assignment of all right, title and interest in the ’088 patent and has exclusive right to bring suit to enforce the patent. Evidence of such assignment has been recorded with the U.S. Patent and Trademark Office at Reel/Frame 048640/0092. The claims of the ’088 patent are valid and enforceable. A true and correct copy of the ’088 patent is attached hereto as **Exhibit 4** to this complaint.

RESPONSE: Defendants admit that U.S. Patent No. 10,507,088 (“the ’088 patent”) states that it issued December 17, 2019. The ’088 patent is entitled “Imaging Apparatus with Simplified Optical Design” and names Tal Verker, Adi Levin, Ofer Saphier, and Maayan Moshe as inventors. To the extent there are any remaining allegations in paragraph 21 not addressed by the foregoing, Defendants deny them.

22. On December 17, 2019, the U.S. Patent and Trademark Office duly and lawfully issued U.S. Patent No. 10,507,089 (“the ’089 patent”), entitled “Imaging Apparatus with Simplified Optical Design” naming Tal Verker, Adi Levin, Ofer Saphier, and Maayan Moshe as the inventors. Align is the owner by assignment of all right, title and interest in the ’089 patent and has exclusive right to bring suit to enforce the patent. Evidence of such assignment has been recorded with the U.S. Patent and Trademark Office at Reel/Frame 049024/0020. The claims of the ’089 patent are valid and enforceable. A true and correct copy of the ’089 patent is attached hereto as **Exhibit 5** to this complaint.

RESPONSE: Defendants admit that U.S. Patent No. 10,507,089 (“the ’089 patent”) states that it issued December 17, 2019. The ’089 patent is entitled “Imaging Apparatus with Simplified Optical Design” and names Tal Verker, Adi Levin, Ofer Saphier, and Maayan Moshe as

inventors. To the extent there are any remaining allegations in paragraph 22 not addressed by the foregoing, Defendants deny them.

BACKGROUND

23. Align was founded in 1997 and is a global medical device company with industry leading innovative products such as the iTero intraoral scanner and the Invisalign clear aligner system that help dental and orthodontic professionals deliver effective, cutting-edge dental and orthodontic options to their patients.

RESPONSE: Denied, except Defendants admit that Align is a global medical device company that sells iTero intraoral scanners and Invisalign clear aligners in the United States.

24. Align's iTero intraoral scanners scan and provide, in conjunction with Align's Invisalign orthodontic system, color 3D imaging of an intraoral surface, such as the teeth and gums, without drying and powdering the intraoral surface, resulting in a digital impression. Align's iTero intraoral scanners and the software within the iTero and Invisalign systems that works in conjunction with the scanner thus eliminate the need for traditional teeth impressions typically taken with an elastomeric or other material.

RESPONSE: Denied, except Defendants admit that Align iTero scanners provide 3D scanning capabilities allowing for digital impressions of a patient's full mouth for orthodontic treatment.

25. The digital impression captured by Align's iTero intraoral scanners, when teamed with Align's Invisalign system, can be used in a variety of dental and orthodontic applications such as, for example, tracking a patient's progress during the Invisalign treatment, tracking changes in a patient's dentition over time, mapping the occlusion of a patient's teeth, and correcting inaccurate scan data.

RESPONSE: Denied, except Defendants admit that Align iTero scanners provide 3D scanning capabilities allowing for digital impressions of a patient's full mouth for orthodontic treatment.

26. Align's iTero intraoral scanner and Invisalign system constitute a proprietary system and method for treating, among other things, malocclusion, misalignment, and/or chipped or missing teeth using a high-precision, high-speed intraoral scanner and related software to create a variety of orthodontic and dental devices including, but not limited to, crowns, bridges, bracket templates, aligners and implants. Each dental device is custom-manufactured for each patient using computer-aided design techniques and sophisticated computer graphic interfaces to communicate with the patient's dental or orthodontic professional in the planning, implementation, and revision of the customized treatment program.

RESPONSE: Denied, except Defendants admit that Align's iTero scanners are promoted as assisting clinicians and technicians in the treatment of dental disorders and orthodontia.

27. Align's iTero intraoral scanner and Invisalign system, developed by Align over many years and at great expense and effort, represent a breakthrough in the manufacturing principle of "mass customization" and a vast improvement over conventional methods for treating, among other things, chipped or missing teeth, misalignment of teeth and malocclusion. Additionally, the iTero intraoral scanner and Invisalign system provide a "chair-side" platform for live viewing of the digital impression as it is being built on the display screen during scanning, for accessing valuable digital diagnosis and treatment tools, and for enhancing accuracy of records, treatment efficiency, and the overall patient experience. The innovations embodied in Align's iTero intraoral scanner and Invisalign system are protected by numerous United States and foreign patents.

RESPONSE: Defendants are without knowledge or information sufficient to form a belief as to the truth of the allegations of paragraph 27, and therefore deny the same.

28. 3Shape was founded in the early 2000s as a hearing aid company. It was not until 2011 that 3Shape entered into the digital dentistry market and into competition with Align.

RESPONSE: Denied.

29. On information and belief, 3Shape designs, develops, markets, manufactures, uses, sells, offers for sale, and/or imports its digital dentistry solutions within the United States. For example, 3Shape designs, develops, markets, manufactures, uses, sells, offers for sale, and/or imports 3Shape TRIOS, TRIOS 3 and TRIOS 4 intraoral scanning systems (collectively, the "TRIOS intraoral scanning systems"), as well as related TRIOS software, TRIOS Module software, Ortho System software, and Dental System software (collectively "3Shape Software") within the United States. On information and belief, 3Shape designs, develops, manufactures, and markets the TRIOS 3 and TRIOS 4 scanners (collectively, the "TRIOS scanners"). Moreover, 3Shape is involved in the sale of and/or importation into the United States of intraoral scanners, digital models, and digital data for dental and orthodontic applications including, but not limited to, crowns, bridges, bracket templates, aligners and implants. 3Shape's intraoral scanners for dental and orthodontic applications described above embody and/or use the patented apparatuses, systems, and methods at issue.

RESPONSE: Denied.

30. 3Shape's website, www.3shape.com, provides a Webshop for sales of its products and updating subscriptions to its software. (**Exhibit 6**). 3Shape's website also offers training and videos on how to use the TRIOS intraoral scanning systems, TRIOS scanners, and the 3Shape Software. (**Exhibit 7**). Additionally, 3Shape has a YouTube channel with training videos at www.youtube.com/3shapeTrainingVideos showing how to use the TRIOS intraoral scanning systems, TRIOS scanners, and the 3Shape Software. (*Id.*) 3Shape's website provides information for contacts in the United States for its Sales and 3Shape Academy Training. (**Exhibit 8**).

RESPONSE: Defendants lack sufficient information regarding the 3Shape entity to which the allegations of paragraph 30 are directed to admit or deny those allegations, and on that basis, deny the allegations of paragraph 30.

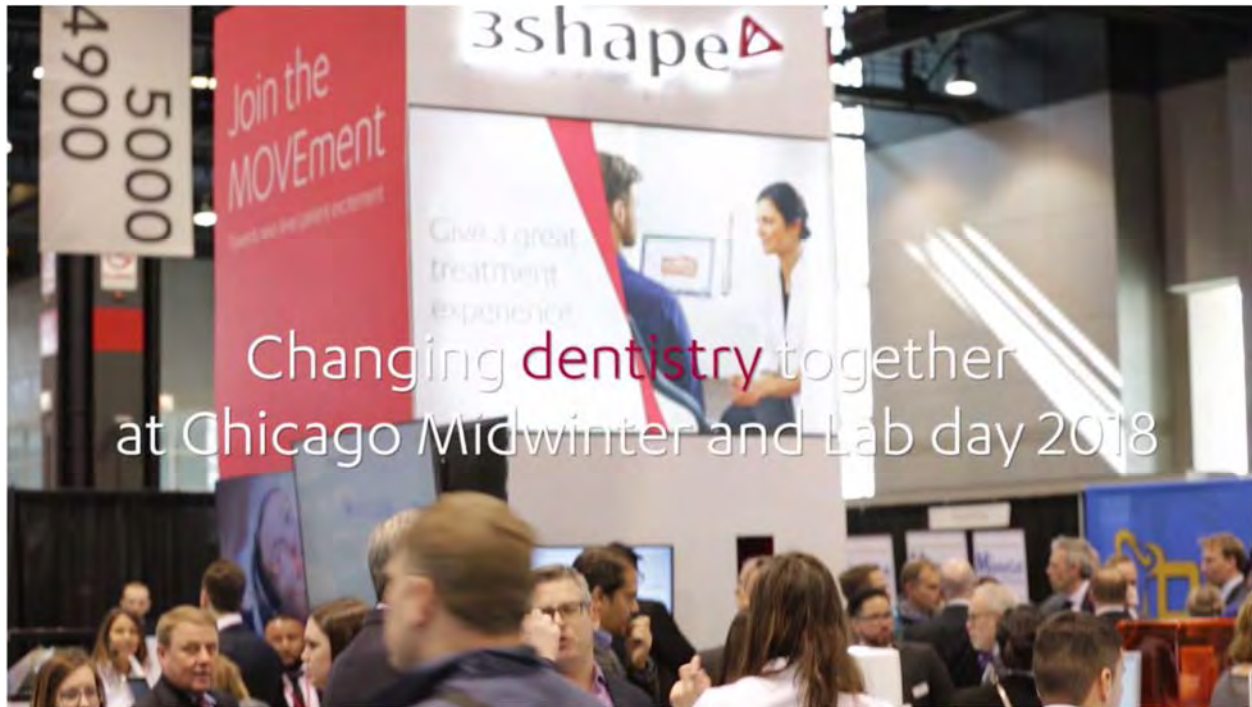
31. 3Shape's website further provides a "Knowledge Center" with user manuals on the products and how to use the products to encourage purchase and use of 3Shape products, including for the TRIOS intraoral scanning systems (**Exhibit 9**), the TRIOS Module software (**Exhibit 10**), the Ortho System software (**Exhibit 11**); and the Dental System software (**Exhibit 12**).

RESPONSE: Defendants lack sufficient information regarding the 3Shape entity to which the allegations of paragraph 31 are directed to admit or deny those allegations, and on that basis, deny the allegations of paragraph 31.

32. 3Shape attends trade shows in the United States, where it has demonstrated, and continues to demonstrate, the use of the TRIOS intraoral scanning systems, TRIOS scanners, and related software to the public and orthodontists. (**Exhibit 13** (US International Trade Commission, Inv. No. 337-TA-1091, Open Sessions, Sept. 19, 2018, at 807:14-21; 899:9-13)). 3Shape demonstrates the products at trade shows because it hopes that someone will buy its products. (*Id.* at 899:14-17.)

RESPONSE: Defendants lack sufficient information regarding the 3Shape entity to which the allegations of paragraph 32 are directed to admit or deny those allegations, and on that basis, deny the allegations of paragraph 32.

33. On information and belief, 3Shape has used, sold, and offered for sale its digital dentistry solutions, including the TRIOS intraoral scanning systems and the 3Shape Software, at conferences in the United States, including at least the 2018 Greater New York Dental Meeting (**Exhibit 14** at 157 (List of Exhibitors)) and the 2018 Chicago Dental Society Midwinter Meeting.



<https://www.3shape.com/-/media/corporate-video/exhibitions-and-events-new/highlights-from-chicago.mp4>. And on information and belief, 3Shape plans to offer its digital dentistry solutions for sale at the 2019 Chicago Midwinter Meeting. (**Exhibit 15** at 144 (Exhibitor Index).)

RESPONSE: Defendants lack sufficient information regarding the 3Shape entity to which the allegations of paragraph 33 are directed to admit or deny those allegations, and on that basis, deny the allegations of paragraph 33.

34. 3Shape's TRIOS intraoral scanning systems, as well as the related 3Shape Software, directly compete with the Align's iTero scanners and Invisalign system. On information and belief, 3Shape developed, made and sold its intraoral scanning systems and software with the intent to directly compete with Align's intraoral scanners and functionalities within the iTero and Invisalign systems. Before introducing its products, 3Shape was aware of the structure, design and operation of Align's patented intraoral scanners and software, including but not limited to intraoral scanners and software developed by Cadent Holdings, Inc. ("Cadent") which Align acquired on April 29, 2011. Moreover, 3Shape has previously entered into agreements with Align that provided 3Shape with significant access to Align's patented technologies.

RESPONSE: Denied that TRIOS is a product of 3Shape A/S and 3Shape, Inc., and therefore deny the allegations of paragraph 34, except admit that the TRIOS and iTero scanners compete against each other in the market for scanners for orthodontic treatment.

35. On information and belief, 3Shape developed, made, and sold its infringing TRIOS scanning systems and infringing 3Shape Software despite having knowledge of the Align patents at issue based on, at a minimum (i) its knowledge of the Align intraoral scanners and software being covered by numerous patents, including the patents at issue, through its prior business dealings with Align, including those with Cadent, whereby 3Shape acquired specific and detailed knowledge from Align regarding the structure, function, operation and commercial benefits of the Align products and the patent protection afforded to certain structures, functions and operations of the patented Align technology; (ii) by virtue of 3Shape's patent prosecution activities wherein Align's patents at issue and/or family members were cited as prior art, including but not limited the patents-in-suit, their applications or related family members; and/or (iii) by virtue of 3Shape's U.S. Food and Drug Section 510(k) premarket notification of intent to market the accused products which identifies 3Shape's accused products as substantially equivalent to Align's patent practicing products (*see, e.g., Exhibit 16*).

RESPONSE: Denied.

36. Align has asserted several of its patents in other actions in this District and in the United States International Trade Commission ("ITC") beginning in 2017, including patent infringement allegations against the TRIOS intraoral scanning systems, and the 3Shape Software. On the public record in Investigation No. 337-TA-1091 in the ITC, 3Shape's Vice President of Orthodontics Mr. Allan Hyldal testified that at least as of 2017, he requested 3Shape engage in a "big analysis" of Align's patents. (**Exhibit 13** at 894:14-17.) 3Shape engaged in this analysis because it believed it could not use Align's technology. (*Id.* at 896:18-897:6.) 3Shape was performing a risk assessment of Align's patent portfolio because 3Shape recognized it did not have a license to Align's patents. (*Id.* at 897:7-13.) During this assessment, internal concerns at 3Shape were raised about Align's patents. (*Id.* at 905:3-11.) Following Align's filing of the patent infringement lawsuits in 2017, 3Shape continues to make, use, sell, and/or offer for sale its products, including the TRIOS scanning systems and the 3Shape Software, in the United States, to import the products into the United States, and to encourage its resellers and others to sell and use its products in the United States, even though it understood doing so would be illegal if it infringed Align's patents as Align alleged. (*Id.* at 881:9-882:5.)

RESPONSE: Denied.

COUNT I – INFRINGEMENT OF THE '420 PATENT

37. Align incorporates by reference its allegations in Paragraphs 1-36 as if fully restated in this paragraph.

RESPONSE: Defendants restate and reincorporate their responses to paragraphs 1-36 as if fully set forth herein.

38. The '420 patent describes in detail and claims in various ways inventions in systems and devices positioning a virtual bracket on a patient's tooth.

RESPONSE: Denied.

39. The '420 patent describes problems and shortcomings in the then-existing field of digital dentistry and describes and claims novel and inventive technological improvements and solutions to such problems and shortcomings. (**Exhibit 1** at 1:20-2:7.) The claimed invention utilizes a specialized plane such as the curve of Spee or the Andrew's plane passing through virtual crowns. Using this specialized plane through the virtual crowns improves the accuracy in accessing the optimal surface for bracket placement on severely crowded teeth or in teeth where the bonding surface is obstructed by teeth in the opposing arch during jaw closure. This improved data resulted in better treatment plans for patients through dynamic predictive staging and planning.

RESPONSE: Denied.

40. On information and belief, 3Shape has been and is now directly and/or indirectly infringing, literally and/or under the doctrine of equivalents, the '420 patent by making, using, selling, and/or offering for sale in the United States, and/or importing into the United States, products covered by one or more of the claims of the '420 patent, including the Ortho System software product.

RESPONSE: Denied.

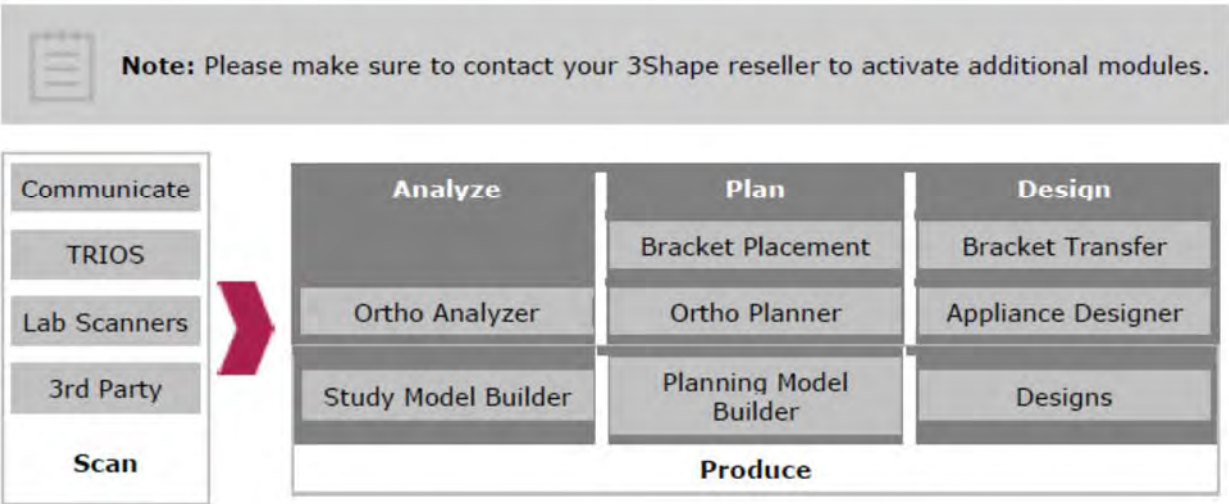
41. The '420 patent is generally directed to a system for positioning a virtual bracket on a patient's tooth. Claim 11 of the '420 patent recites a system for positioning a virtual bracket on a patient's tooth, the system comprising: a processor; and memory comprising program code that, when executed by the processor, causes the system to: receive a digital data set representing a patient's teeth; generate, on a display, a graphical representation of a reference surface passing through a crown of each of the patient's teeth, the reference surface defined at least in part by one or more of a curve of Spee or an Andrew's plane corresponding to the digital data set, wherein the graphical representation is manipulable on the display by a user so as to modify the reference surface; and determine an initial position for the virtual bracket on the patient's tooth, wherein the virtual bracket is aligned with the graphical representation of the reference surface generated on the display."

RESPONSE: Denied.

42. 3Shape's TRIOS intraoral scanning systems and/or the Ortho System software product infringes at least claim 11 of the '420 patent. For example, 3Shape's Ortho System software product is a system for positioning a virtual bracket on a patient's tooth, the system comprising: a processor; and memory comprising program code that, when executed by the processor, causes the system to: receive a digital data set representing a patient's teeth; generate, on a display, a graphical representation of a reference surface passing through a crown of each of the patient's teeth, the reference surface defined at least in part by one or more of a curve of Spee or an Andrew's plane corresponding to the digital data set, wherein the graphical representation is manipulable on the display by a user so as to modify the reference surface; and determine an initial position for the virtual bracket on the patient's tooth, wherein the virtual bracket is aligned with the graphical representation of the reference surface generated on the display, as shown, for example, in the 3Shape Ortho System User Manual and Training Video below.

ORTHO SYSTEM™ APPLICATION OVERVIEW

The Ortho System™ software modules offer flexible options within digital orthodontics.



(See, e.g., 3Shape Ortho System Manual 1.7.1.1 (Oct. 18, 2018) (available at <https://www.3shape.com/en/knowledge-center/user-manuals#ortho-system>) (herein “Ortho System Manual”) at 10 (showing that 3Shape’s Ortho System includes the Bracket Placement module).)


4.1.5.2 Bracket Placement



The **Bracket Placement** option in the function panel allows you to accurately position brackets used for straight wire technique on the patient’s malocclusion in order to optimize the treatment efficiency and reduce bonding chair time. The brackets positions can then be transferred to Appliance Designer where the transfer media can easily be designed with the dedicated bracket transfer option (see the chapter [Bracket Transfer Master Model](#)). To place the brackets, go through the workflow described in the steps below.

(See, e.g., id. at 135 (showing that the Bracket Placement module is a system for positioning a virtual bracket on a patient’s tooth).)

► Step 3: Segment Maxilla and Mandible

 Perform the segmentation of Maxillary and Mandibular models as usual (see the chapter [Segmentation of Maxillary Model](#)).

Hint: The **Set points** substep of the maxilla/mandible segmentation allows you to define the teeth long axes which will in turn be used to define the optimal position of the bracket, known as FA points (see [Adjusting FA points](#) below). Using DICOM Cone Beam (CBCT) scans overlay and adjusting their transparency helps to position the tooth long axes in the most accurate way according to the root situation.

Adjusting FA points

At the **Rotation center** substep, you can adjust position of FA points on each of the teeth. The default position of an FA point is defined at the intersection of the projected long axis on the vestibular side of the tooth and the mid-transverse plane of the crown. The mid-transverse plane of the crown is calculated from the top of the tooth at the gingival contour to the tip of the tooth.

FA points turn white when hovering the mouse cursor over them on the teeth.

FA points

☐ Move freely

☒ Move along vertical axis

☐ Move along horizontal axis

Reference plane




☒ Show plane and measurements

Occlusion plane

Translate plane to:




Automatic tooth tip

To position FA points, use the tools to the left of the screen. Choose how to move FA points along the tooth by selecting the corresponding radio button.

To reset an FA point to its default position, use the  button. To lock the positioning of all FA points, use the  button, and to lock/unlock the positioning of the selected FA point, use the  button.

Enabling the **Show plane and measurements** option displays the chosen reference plane and relevant measurements in the **Front**, **Side** and **Top** views of the tooth at the bottom of the screen. Choose the needed reference plane and the landmark to translate the plane to from the corresponding drop-down menus to get specific measurements from their correlation.

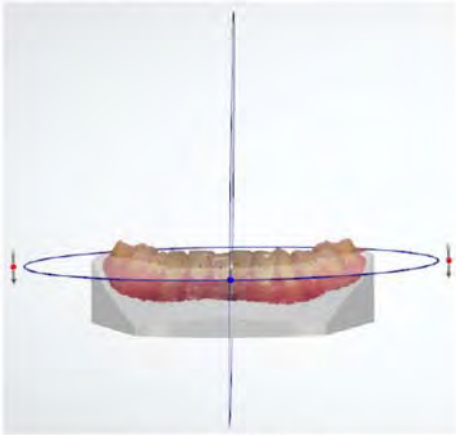
At the **Archwire plane** substep, you are offered the **Dual view** model representation, where you can choose the desired mode:

-  **Dual view mode** - splits the window in two, showing the malocclusion on the left side and the resulted setup on the right side of the window simultaneously.
-  **Left side only** - shows only the malocclusion.
-  **Right side only** - shows only the resulted setup.

Set the plane for the archwire placement using the following options:

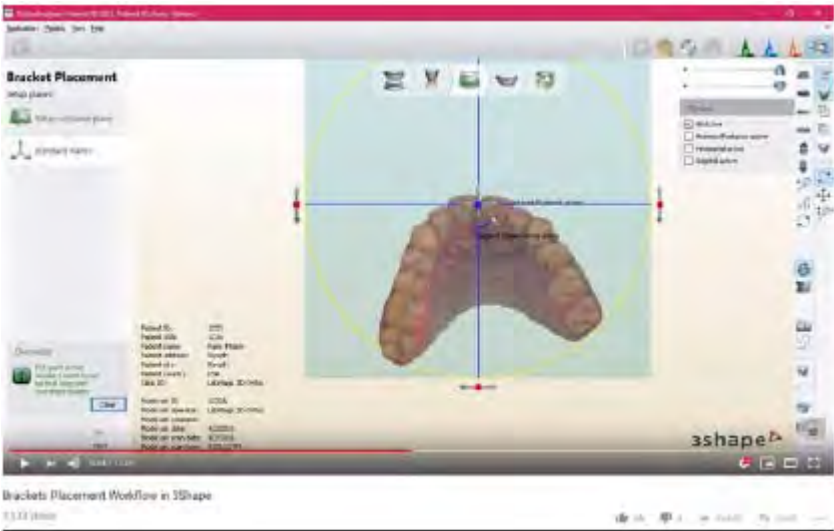
Option	Description
Show sagittal plane	Displays the set sagittal plane in addition to the archwire plane.
Set by FA points	Sets the archwire plane by the placed FA points.
Align to sagittal plane	Aligns the archwire plane perpendicular to the set sagittal plane.

Adjust the plane's position using the control points.

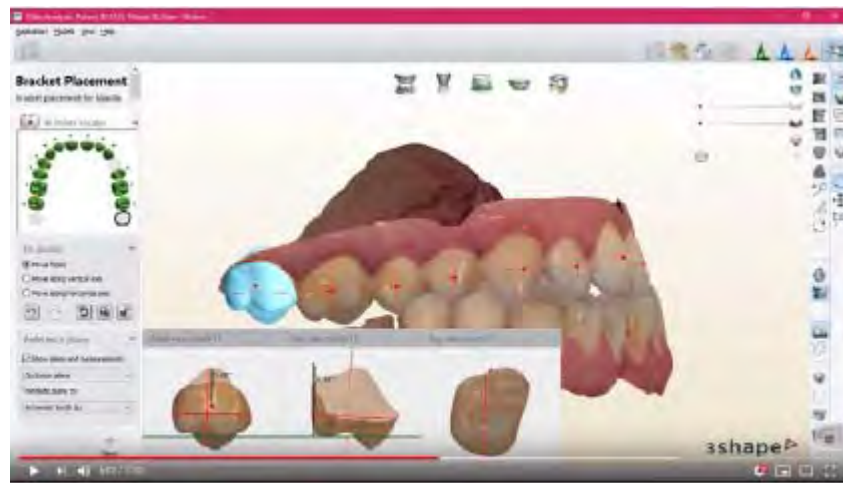


Adjusting the archwire plane position
138

(See, e.g., id. at 136-38 (showing that Ortho System receives a digital data set representing a patient's teeth; generate, on a display, a graphical representation of a reference surface passing through a crown of each of the patient's teeth.) The reference surface passing through the teeth is a sagittal plane as shown above and is defined at least in part by one or more of a curve of Spee or an Andrew's plane corresponding to the digital data set.



(See, e.g., Brackets Placement Workflow in 3Shape Video at 5:54, available at <https://www.youtube.com/watch?v=oh--TDg3ACA>.) The graphical representation is manipulable on the display by a user so as to modify the reference surface.



Brackets Placement Workflow in 3Shape
5:13 (00:00)



Brackets Placement Workflow in 3Shape
6:13 (00:00)

(See, e.g., Brackets Placement Workflow in 3Shape Video at 6:07 and 7:36, available at <https://www.youtube.com/watch?v=oh--TDg3ACA>.) 3Shape's Ortho System determines an initial position for the virtual bracket on the patient's tooth, which is shown by the red FA points and the virtual bracket is aligned with the graphical representation of the reference surface generated on the display.

RESPONSE: Denied.

43. 3Shape possesses knowledge of and is aware of the '420 patent by virtue of, at a minimum, the filing of the Original Complaint on December 11, 2018 and, on information and belief, possessed prior knowledge of the '420 patent by virtue of the prior business dealings between 3Shape and Align and other facts described above.

RESPONSE: Denied.

44. 3Shape also has been and is now actively inducing infringement of one or more claims of the '420 patent, either literally or under the doctrine of equivalents.

RESPONSE: Denied.

45. On information and belief, 3Shape A/S and 3Shape TRIOS A/S alone and/or acting in concert with, directing and/or authorizing 3Shape US and/or 3Shape Manufacturing US, LLC to make, use, sell or offer for sale in the United States or import into the United States the TRIOS intraoral scanning systems and/or the Ortho System software product (**Exhibit 6; Exhibit 13** at 809:1-810:3, 899:2-24), possesses an affirmative intent to actively induce infringement by others (**Exhibits 6-11, Exhibit 13** at 809:1-810:3, 899:2-24). On information and belief, 3Shape A/S and/or 3Shape TRIOS A/S induces 3Shape US and/or 3Shape Manufacturing US, LLC to infringe (**Exhibits 6-11**).

RESPONSE: Denied.

46. On information and belief, 3Shape US alone and/or acting in concert with, directing and/or authorizing 3Shape A/S, 3Shape TRIOS A/S, and/or 3Shape Manufacturing US, LLC to make, use, sell or offer for sale in the United States or import into the United States the TRIOS intraoral scanning systems and/or the Ortho System software product (**Exhibit 6; Exhibit 13** at 809:1-810:3, 899:2-24), possesses an affirmative intent to actively induce infringement by others. (**Exhibits 6-11; Exhibit 13** at 809:1-810:3, 899:2-24).

RESPONSE: Denied.

47. On information and belief, 3Shape Manufacturing US alone and/or acting in concert with, directing and/or authorizing 3Shape A/S, 3Shape TRIOS A/S, and/or 3Shape US to make, use, sell or offer for sale in the United States or import into the United States the TRIOS intraoral scanning systems and/or the Ortho System software product, possesses an affirmative intent to actively induce infringement by others. On information and belief, 3Shape Manufacturing US, LLC induces 3Shape A/S and/or 3Shape TRIOS A/S and/or 3Shape US to infringe.

RESPONSE: Denied.

48. 3Shape has intended, and continues to intend to induce infringement of the '420 patent by others and has knowledge, with specific intent, that the inducing acts would cause infringement or has been willfully blind to the possibility that its inducing acts would cause the infringing acts. For example, 3Shape is aware that the features claimed in the '420 patent are features in the Ortho System software product and are features used by others that purchase the Ortho System software product and, therefore, that purchasers and end users will infringe the '420 patent by using the Ortho System software product in accordance with the promotional and training material disseminated by 3Shape. 3Shape actively induces infringement of the '420 patent with knowledge and the specific intent to encourage that infringement by, inter alia, disseminating the Ortho System software product and providing promotional materials, marketing materials, training materials, instructions, product manuals, user guides, and technical information (including

but not limited to the User Manual and training video described in this Count of the Complaint) to others including, but not limited to, resellers, distributors, customers, dentists, orthodontists, dental and orthodontic labs, and/or other end users of the Ortho System software product. Those third parties directly infringe the '420 patent by making, using, selling, offering for sale, and/or importing the Ortho System software product.

RESPONSE: Denied.

49. 3Shape also has been and is now contributing to the infringement of one or more claims of the '420 patent, either literally or under the doctrine of equivalents.

RESPONSE: Denied.

50. 3Shape has actively, knowingly, and intentionally contributed and continues to actively, knowingly, and intentionally contribute to the infringement of the '420 patent by having sold or offered to sell and continuing to sell or offer for sale the TRIOS intraoral scanning systems and/or the Ortho System software product within in the United States (**Exhibit 6; Exhibit 13** at 809:1-810:3, 899:2-24) and/or by importing the TRIOS intraoral scanning systems and/or the Ortho System software product into the United States, with knowledge that the infringing technology in the Ortho System software product is especially made and/or especially adapted for use in infringement of the '420 patent (**Exhibit 13** at 894:14-17; 896:18-897:13). 3Shape has contributed to the infringement by others with knowledge that the infringing technology in the Ortho System software product is a material part of the patented invention, and with knowledge that the infringing technology in the Ortho System software product is not a staple article of commerce suitable for substantial non-infringing use, and with knowledge that others including, but not limited to, resellers, distributors, customers, dentists, orthodontists, dental and orthodontic labs, and/or other end users of the Ortho System software product infringe and will continue to infringe the '420 patent because, due to their specific designs, the accused products and components thereof do not have any substantial non-infringing uses. 3Shape has such knowledge at least because the claimed features of the '420 patent are used by others including, but not limited to, resellers, distributors, customers, dentists, orthodontists, dental and orthodontic labs, and/or other end users of the Ortho System software product (**Exhibits 7, 8**).

RESPONSE: Denied.

51. On information and belief, 3Shape knew or should have known of the '420 patent and has acted, and continues to act, in an egregious and wanton manner by infringing the '420 patent. On information and belief, 3Shape's infringement of the '420 patent has been and continues to be willful and deliberate. The market for intraoral scanners and related dental and orthodontic software products contains a limited number of competitors, with Align being a known pioneer with whom 3Shape has studied familiarity. The companies have worked together in the past and 3Shape has had ample access to Align's technology. Moreover, 3Shape spent ample time studying Align patents. Upon information and belief, 3Shape knowingly developed and sold its competitive knockoff products in an infringing manner that was known to 3Shape or was so obvious that 3Shape should have known about this infringement.

RESPONSE: Denied.

52. Moreover, at least as of 2017, 3Shape engaged in a “big analysis” of Align’s patents. 3Shape engaged in this analysis because it believed it could not use Align’s technology until at least 2020. 3Shape was performing a risk assessment of Align’s patent portfolio because 3Shape recognized risks in introducing potentially infringing Align’s patents. During this assessment, internal concerns at 3Shape were raised about Align’s patents. 3Shape continues to make, use, sell, and/or offer for sale the TRIOS intraoral scanning systems, and the TRIOS Software, Dental System and/or Ortho System software in the United States, to import the products into the United States, and to encourage its resellers and others to sell and use the products in the United States, despite being aware of a substantial risk of infringement.

RESPONSE: Denied.

53. On information and belief, despite knowing that its actions constituted infringement of the ’420 patent and/or despite knowing that there was a high likelihood that its actions constituted infringement of the patent, 3Shape nevertheless continued its infringing actions, and continues to make, use and sell its infringing products.

RESPONSE: Denied.

54. 3Shape’s acts of infringement have injured and damaged Align.

RESPONSE: Denied.

55. 3Shape’s wrongful conduct has caused Align to suffer irreparable harm resulting from the loss of its lawful patent rights to exclude others from making, using, selling, offering to sell and importing the patented inventions. Upon information and belief, 3Shape will continue these infringing acts unless enjoined by this Court.

RESPONSE: Denied.

COUNT II – INFRINGEMENT OF THE ’430 PATENT

56. Align incorporates by reference its allegations in Paragraphs 1-55 as if fully restated in this paragraph.

RESPONSE: Defendants restate and reincorporate their responses to paragraphs 1-55 as if fully restated in this paragraph.

57. On information and belief, 3Shape has been and is now directly and/or indirectly infringing, literally and/or under the doctrine of equivalents, the ’430 patent by making, using, selling, and/or offering for sale in the United States, and/or importing into the United States, products covered by one or more of the claims of the ’430 patent, including the TRIOS 3 and 4 scanners.

RESPONSE: Denied.

58. The '430 patent is generally directed to determining and imaging three-dimensional structures. Claim 1 of the '430 patent recites a confocal imaging apparatus comprising: an illumination module to generate an array of light beams; focusing optics comprising a plurality of lenses disposed along an optical path of the array of light beams, the focusing optics to perform confocal focusing of the array of light beams onto a non-flat focal surface and to direct the array of light beams toward a three dimensional object to be imaged; a translation mechanism to adjust a location of at least one lens of the plurality of lenses to displace the non-flat focal surface along an imaging axis defined by the optical path; and a detector to measure intensities of an array of returning light beams that are reflected off of the three dimensional object and directed back through the focusing optics, wherein the intensities of the array of returning light beams are to be measured for a plurality of locations of the at least one lens for determination of positions on the imaging axis of a plurality of points of the three dimensional object, wherein detected positions of one or more of the plurality of points are to be adjusted to compensate for the non-flat focal surface.

RESPONSE: Denied.

59. Upon information and belief, 3Shape's TRIOS 3 and 4 scanners infringe at least claim 1 of the '430 patent. For example, 3Shape's TRIOS 3 and 4 scanners comprise an illumination module to generate an array of light beams, as shown, for example, in the demonstration video, TRIOS®3 brochure, and press release below.



(See, e.g., **Exhibit 17**, 3Shape TRIOS®3 Digital Impression Scanning (available at: <http://www.dts-international.com/trios3>).)

Field Cod



(Id.)

Be equipped for success with
NEW 3Shape TRIOS innovation



3Shape TRIOS® 4

The most powerful 3Shape intraoral scanner to date!



Caries diagnostic aid*

The world's first intraoral scanner with digital detection of possible surface and interproximal caries** without the need for an additional scanning device



Smart tips

New generation of tips with instant-heat technology so you are scan-ready in seconds, and enabling 30% additional battery life. Plus a dedicated tip to aid the detection of interproximal caries.**



3Shape TRIOS 3 Basic

The entry-level intraoral scanning solution

- Core award-winning TRIOS scanning technology.
- Simple 'scan and send-to' workflow.

(See, e.g., **Exhibit 18**, 3Shape TRIOS®3 Digital Impression Solution Brochure (3Shape website, available at: <https://www.3shape.com/en/scanners/trios-3>

<https://embed.widenet.net/pdf/plus/3shape/9gikyqthjr/3Shape-TRIOS-2019-Brochure-EN.pdf?u=6xmdhr>.)

Field Cod

1. Choose your scanner



TRIOS 4



TRIOS 3
Available in open and handle grips



TRIOS 3 Basic
Available in wired version only

2. Choose your connection



Wireless
Options for TRIOS 4 and TRIOS 3



Wired

3. Choose your setup



MOVE



CART
Available with TRIOS 3 Basic and TRIOS 3



POD

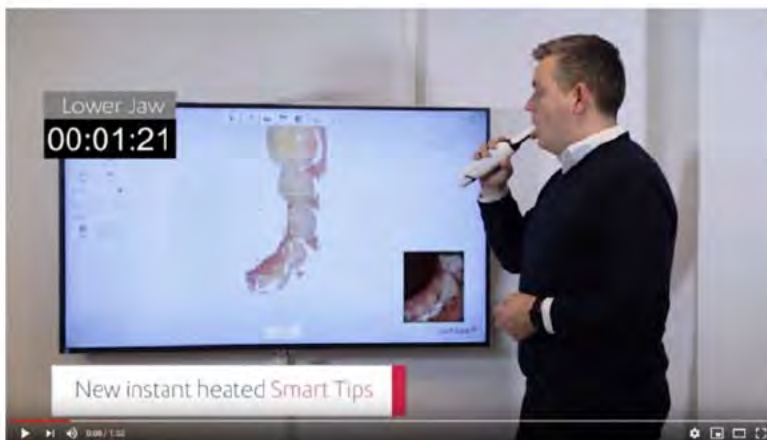
	TRIOS 4	TRIOS 3	TRIOS 3 Basic
Scanner operation:			
Wireless	✓	✓	N/A
Autoscan	✓	✓	✓
3Shape accuracy	✓	✓	✓
Real colors and shade measurement	✓	✓	✓
Smart pop	✓	N/A	N/A
Caries diagnostic aid*	✓	N/A	N/A

(Id.)



(See, e.g., **Exhibit 19**, 3Shape TRIOS®3 Video (See 3Shape Trios 3 Wireless Insane Speed in Action, available at: <https://www.youtube.com/watch?v=C5jKnxEyrbU>).)

Field Cod



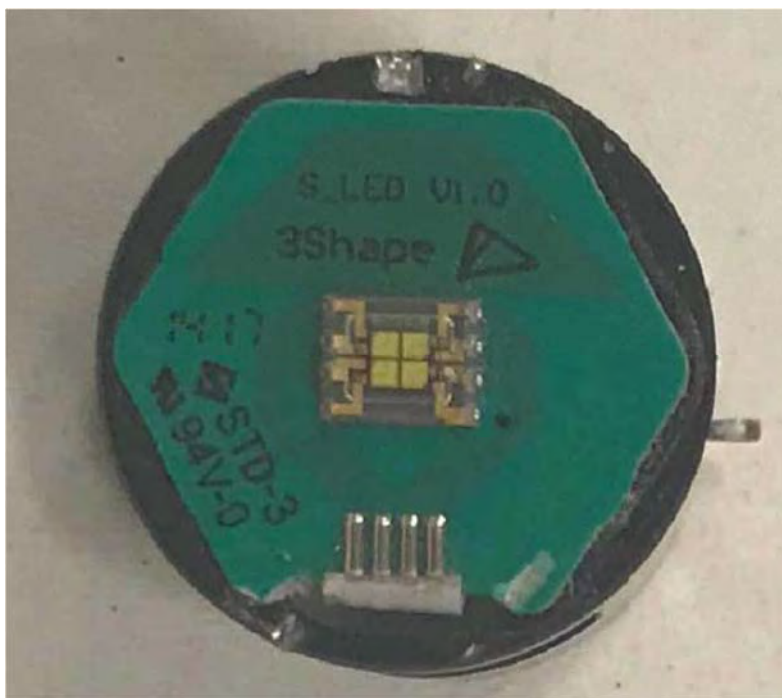
(See, e.g., **Exhibit 20**, 3Shape TRIOS@4 Video (3Shape's Morten Ryde Demonstrates the New 3Shape Trios 4, available at: <https://www.youtube.com/watch?v=IJONd8Ywc3U>.)

Field Cod

For example, the Accused Devices practice these feature as shown in the screenshots below:



(Showing an example of an array of light beams being generated.)



(Showing an example of an illumination module configured to generate an array of light beams.)





(Showing an example of an array of light beams.)

RESPONSE: Denied.

60. For example, 3Shape's TRIOS 3 and 4 scanners comprise focusing optics comprising a plurality of lenses disposed along an optical path of the array of light beams, the focusing optics to perform confocal focusing of the array of light beams onto a non-flat focal surface and to direct the array of light beams toward a three dimensional object to be imaged, as shown, for example, in the screenshots, demonstration video, TRIOS®3 brochure, and press release below.



(Showing an example of the focusing optics to perform confocal focusing of the array of light beams onto a non-flat focal surface and to direct the array of light beams toward a three dimensional object to be imaged.)



(Showing an example of focusing optics comprising a plurality of lenses disposed along an optical path of the array of light beams.)

RESPONSE: Denied.

61. For example, 3Shape's TRIOS 3 and 4 scanners comprise a translation mechanism to adjust a location of at least one lens of the plurality of lenses to displace the non-flat focal surface along an imaging axis defined by the optical path, as shown, for example, in the pictures below:

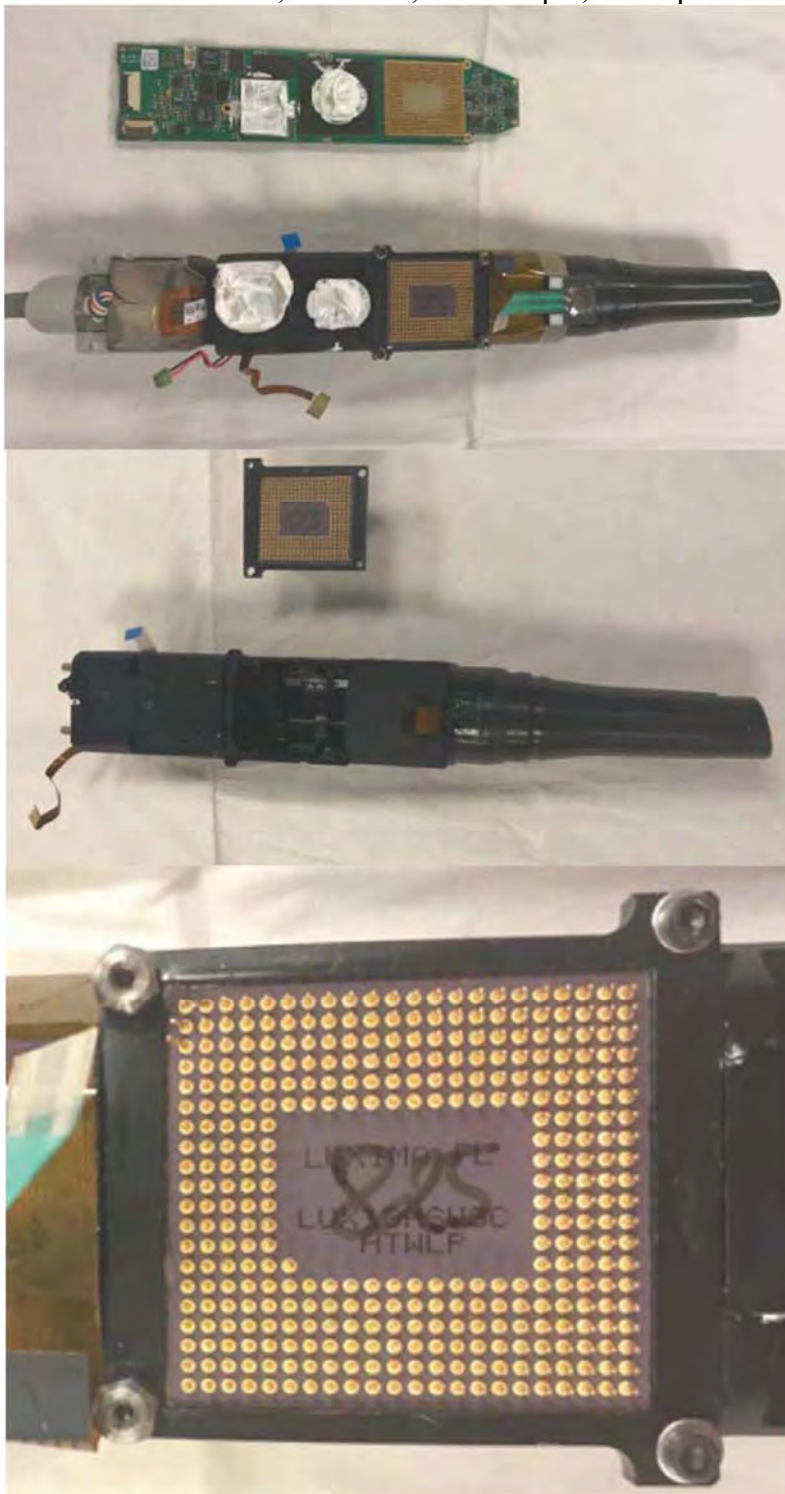


(Showing an example of a translation mechanism to adjust a location of at least one lens of the plurality of lenses within the body of the TRIOS 3 to displace the focal surface along an imaging axis defined by the optical path.)

RESPONSE: Denied.

62. On information and belief, 3Shape's TRIOS 3 and 4 scanners comprise a detector to measure intensities of an array of returning light beams that are reflected off of the three

dimensional object and directed back through the focusing optics, wherein the intensities of the array of returning light beams are to be measured for a plurality of locations of the at least one lens for determination of positions on the imaging axis of a plurality of points of the three dimensional object, wherein detected positions of one or more of the plurality of points are to be adjusted to compensate for the non-flat focal surface, as shown, for example, in the pictures below:



(Showing a Luxima image sensor, which is an example of a detector to measure intensities of an array of returning light beams that are reflected from the three-dimensional object and directed back through the focusing optics.) On information and belief, the intensities of the array of returning light beams are measured for a plurality of locations of the at least one lens for determination of positions on the imaging axis of a plurality of points of the three-dimensional object, wherein detected positions of one or more of the plurality of points are to be adjusted to compensate for the non-flat focal surface.

RESPONSE: Denied.

63. 3Shape possesses knowledge of and is aware of the '430 patent by virtue of, at a minimum, the filing of the Complaint in 1:19-cv-02098 and, on information and belief, possessed prior knowledge of the '430 patent by virtue of the prior business dealings between 3Shape and Align and other facts described above.

RESPONSE: Denied.

64. 3Shape also has been and is now actively inducing infringement of one or more claims of the '430 patent, either literally or under the doctrine of equivalents.

RESPONSE: Denied.

65. On information and belief, 3Shape A/S alone and/or acting in concert with, directing and/or authorizing 3Shape TRIOS A/S, 3Shape US, and/or 3Shape Manufacturing US, LLC to make, use, sell or offer for sale in the United States or import into the United States the TRIOS 3 and 4 scanners possesses an affirmative intent to actively induce infringement by others.

RESPONSE: Denied.

66. On information and belief, 3Shape US alone and/or acting in concert with, directing and/or authorizing 3Shape A/S, 3Shape TRIOS A/S, and/or 3Shape Manufacturing US, LLC to make, use, sell or offer for sale in the United States or import into the United States the TRIOS scanners, possesses an affirmative intent to actively induce infringement by others.

RESPONSE: Denied.

67. On information and belief, 3Shape Manufacturing US, LLC alone and/or acting in concert with, directing and/or authorizing 3Shape A/S, 3Shape TRIOS A/S, and/or 3Shape US to make, use, sell or offer for sale in the United States or import into the United States the TRIOS scanners, possesses an affirmative intent to actively induce infringement by others. On information and belief, 3Shape Manufacturing US, LLC induces 3Shape A/S and/or 3Shape TRIOS A/S and/or 3Shape US to infringe.

RESPONSE: Denied.

68. On information and belief, 3Shape A/S induces 3Shape TRIOS A/S, 3Shape Manufacturing US, LLC, and/or 3Shape US to infringe the '430 patent.

RESPONSE: Denied.

69. 3Shape has intended, and continues to intend to induce infringement of the '430 patent by others and has knowledge, with specific intent, that the inducing acts would cause infringement or has been willfully blind to the possibility that its inducing acts would cause the infringing acts. For example, 3Shape is aware that the features claimed in the '430 patent are features in the TRIOS 3 and 4 scanners and are features used by others that purchase TRIOS 3 and 4 scanners and, therefore, that purchasers and end users will infringe the '430 patent by using the TRIOS scanners. 3Shape actively induces infringement of the '430 patent with knowledge and the specific intent to encourage that infringement by, inter alia, disseminating the TRIOS 3 and 4 scanners and providing promotional materials, marketing materials, training materials, instructions, product manuals, user guides, and technical information (including but not limited to the demonstration video, brochure, and press release described in this Complaint) to others including, but not limited to, resellers, distributors, customers, dentists, orthodontists, dental and orthodontic labs, and/or other end users of the TRIOS 3 and 4 scanners. Those third parties directly infringe the '430 patent by making, using, selling, offering for sale, and/or importing the TRIOS 3 and 4 scanners.

RESPONSE: Denied.

70. 3Shape also has been and is now contributing to the infringement of one or more claims of the '430 patent, either literally or under the doctrine of equivalents.

RESPONSE: Denied.

71. 3Shape has actively, knowingly, and intentionally contributed and continues to actively, knowingly, and intentionally contribute to the infringement of the '430 patent by having sold or offered to sell and continuing to sell or offer for sale the TRIOS 3 and 4 scanners within in the United States and/or by importing the TRIOS 3 and 4 scanners into the United States, with knowledge that the infringing technology in the TRIOS 3 and 4 scanners is especially made and/or especially adapted for use in infringement of the '430 patent. 3Shape has contributed to the infringement by others with knowledge that the infringing technology in the TRIOS 3 and 4 scanners is a material part of the patented invention, and with knowledge that the infringing technology in the TRIOS 3 and 4 scanners is not a staple article of commerce suitable for substantial non-infringing use, and with knowledge that others including, but not limited to, resellers, distributors, customers, dentists, orthodontists, dental and orthodontic labs, and/or other end users of the TRIOS 3 and 4 scanners infringe and will continue to infringe the '430 patent because, due to their specific designs, the accused products and components thereof do not have any substantial non-infringing uses. 3Shape has such knowledge at least because the claimed features of the '430 patent are used by others including, but not limited to, resellers, distributors, customers, dentists, orthodontists, dental and orthodontic labs, and/or other end users of the TRIOS 3 and 4 scanners.

RESPONSE: Denied.

72. On information and belief, 3Shape knew or should have known of the '430 patent and has acted, and continues to act, in an egregious and wanton manner by infringing '430 patent.

On information and belief, 3Shape's infringement of the '430 patent has been and continues to be willful and deliberate. The market for intraoral scanners is small and contains a limited number of competitors, with Align being a known pioneer with whom 3Shape has great familiarity. The companies have worked together in the past and 3Shape has had ample access to Align's technology. Upon information and belief, 3Shape knowingly developed and sold its competitive knockoff products in an infringing manner that was known to 3Shape or was so obvious that 3Shape should have known about this infringement.

RESPONSE: Denied.

73. On information and belief, despite knowing that its actions constituted infringement of the '430 patent and/or despite knowing that there was a high likelihood that its actions constituted infringement of the patent, 3Shape nevertheless continued its infringing actions, and continues to make, use, and sell its infringing products.

RESPONSE: Denied.

74. 3Shape's acts of infringement have injured and damaged Align. 3Shape's wrongful conduct has caused Align to suffer irreparable harm resulting from the loss of its lawful patent rights to exclude others from making, using, selling, offering to sell and importing the patented inventions. Upon information and belief, 3Shape will continue these infringing acts unless enjoined by this Court.

RESPONSE: Denied.

COUNT III – INFRINGEMENT OF THE '294 PATENT

75. Align incorporates by reference its allegations in Paragraphs 1-74 as if fully restated in this paragraph.

RESPONSE: Defendants restate and reincorporate their responses to paragraphs 1-74 as if fully set forth herein.

76. The '294 patent describes in detail and claims in various ways inventions in systems and devices for improved virtual models of teeth in alignment.

RESPONSE: Denied.

77. The '294 patent describes problems and shortcomings in the then-existing field of digital dentistry and describes and claims novel and inventive technological improvements and solutions to such problems and shortcomings. (**Exhibit 3** at 1:8-2:38.) The claimed invention provides a virtual representation of an articulator and dental model that precisely simulates the occlusion relationship of the jaws. Specifically, the claimed invention is an articulator with positioning reference components to yield proper occlusion alignment.

RESPONSE: Denied.

78. On information and belief, 3Shape has been and is now directly and indirectly infringing, literally and/or under the doctrine of equivalents, the '294 patent by making, using, selling, and/or offering for sale in the United States, and/or importing into the United States, products covered by one or more of the claims of the '294 patent, including the TRIOS intraoral scanning systems and Dental System software product.

RESPONSE: Denied.

79. The '294 patent is directed to a computer system for generating a virtual model of teeth, comprising: a processor operably coupled to a computer readable storage medium comprising instructions which, when executed, cause the processor to: receive a virtual model of a patient's dentition including a virtual upper jaw member and a virtual lower jaw member respectively corresponding to at least a part of each upper and lower jaw of the patient's dentition; receive data representative of at least a spatial relationship between the upper and lower jaws in occlusion; and incorporate in the virtual model a virtual alignment arrangement configured to provide virtual occlusion alignment between the virtual upper and lower jaw members according to the spatial relationship, the virtual alignment arrangement comprising a first virtual alignment structure of the virtual upper jaw member that receives a second virtual alignment structure of the virtual lower jaw member or the virtual alignment arrangement comprises a first virtual alignment structure of the virtual lower jaw member that receives a second virtual alignment structure of the virtual upper jaw member, thereby defining an updated virtual model, wherein the first virtual alignment structure comprises a first plurality of virtual positioning reference components and the second virtual alignment structure comprises a second plurality of virtual positioning reference components, the first plurality of virtual positioning reference components configured to fit with the second plurality of virtual positioning reference components in order to yield proper occlusion alignment of the virtual upper and lower jaw members.

RESPONSE: Denied.

80. 3Shape's TRIOS intraoral scanning systems and Dental System software product infringes at least claim 1 of the '294 patent. For example, 3Shape's TRIOS intraoral scanning systems and Dental System software product is a computer system for generating a virtual model of teeth, comprising: a processor operably coupled to a computer readable storage medium comprising instructions which, when executed, cause the processor to: receive a virtual model of a patient's dentition including a virtual upper jaw member and a virtual lower jaw member respectively corresponding to at least a part of each upper and lower jaw of the patient's dentition; receive data representative of at least a spatial relationship between the upper and lower jaws in occlusion; and incorporate in the virtual model a virtual alignment arrangement configured to provide virtual occlusion alignment between the virtual upper and lower jaw members according to the spatial relationship, the virtual alignment arrangement comprising a first virtual alignment structure of the virtual upper jaw member that receives a second virtual alignment structure of the virtual lower jaw member or the virtual alignment arrangement comprises a first virtual alignment structure of the virtual lower jaw member that receives a second virtual alignment structure of the virtual upper jaw member, thereby defining an updated virtual model, wherein the first virtual alignment structure comprises a first plurality of virtual positioning reference components and the second virtual alignment structure comprises a second plurality of virtual positioning reference components, the first plurality of virtual positioning reference components configured to fit with

the second plurality of virtual positioning reference components in order to yield proper occlusion alignment of the virtual upper and lower jaw members, as shown, for example, in the 3Shape training videos and user manuals below.

1.23. Digital Model

3Shape Model Builder™ allows you to design lab models for an extensive range of indications including implant models, from intraoral scans, physical impression scans and gypsum scans. You can easily produce all lab models locally, either in-house or through your manufacturing center, bypassing usually slow and expensive manufacturing services.

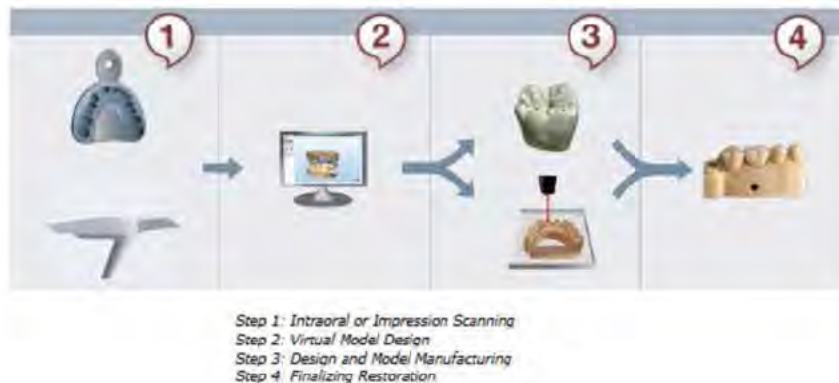
3Shape Model Builder™ supports 3Shape TRIOS and many other validated digital impression-taking solutions, 3D-printers and milling machines while storing machine-specific parameters in editable, reusable profiles.

(See, e.g., 3Shape Dental System 2018 User Manual (herein “Dental System User Manual”) at 374 available at <https://www.3shape.com/en/knowledge-center/user-manuals#dental-system>.)

Field Cod



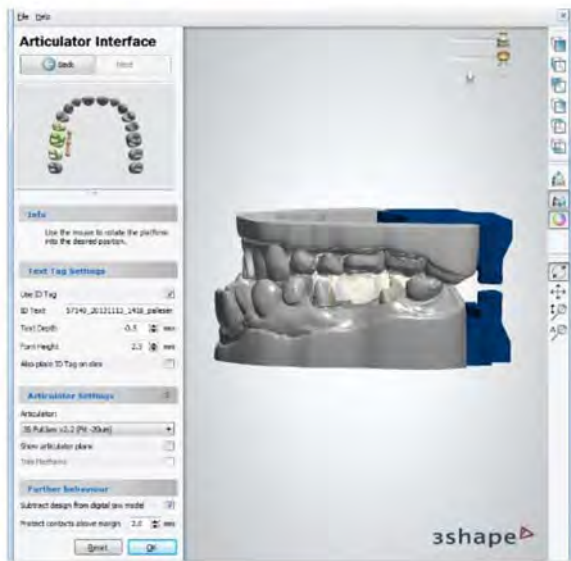
The following image shows 3Shape Model Builder™ workflow:



(*Id.* at 375.) The Model Builder receives a virtual model of a patient's dentition including a virtual upper jaw member and a virtual lower jaw member respectively corresponding to at least a part of each upper and lower jaw of the patient's dentition. As shown above the Model Builder receives data representative of at least a spatial relationship between the upper and lower jaws in occlusion.

Step 5: Setup the Articulator Interface

Rotate articulator interface to set it into the desired position. You can select articulator models within defined in the [Dental System Control Panel](#) and choose whether to use an ID tag on the model.



For more details on **Subtract design from digital jaw model** and **Protect contacts above margin** parameters, please see setup of articulator interface in [Analog Interface](#) chapter. Click **OK** when finished. The virtual model design is now complete:



(Id. at 380, 387.)



(See, e.g., 3Shape marketing video (3Shape YouTube channel), available at: <https://www.youtube.com/watch?v=5AkeTHr5mxc>.) The Model Builder incorporates in the virtual model a virtual alignment arrangement configured to provide virtual occlusion alignment between the virtual upper and lower jaw members according to the spatial relationship. The virtual alignment arrangement has a first virtual alignment structure of the virtual upper jaw member that receives a second virtual alignment structure of the virtual lower jaw member or the virtual alignment arrangement comprises a first virtual alignment structure of the virtual lower jaw member that receives a second virtual alignment structure of the virtual upper jaw member. As shown in the video clips of the model builder, the alignment structures define an updated virtual model, the first virtual alignment structure comprises a first plurality of virtual positioning reference components and the second virtual alignment structure comprises a second plurality of virtual positioning reference components, the first plurality of virtual positioning reference

components configured to fit with the second plurality of virtual positioning reference components in order to yield proper occlusion alignment of the virtual upper and lower jaw members.

RESPONSE: Denied.

81. 3Shape possesses knowledge of and is aware of the '294 patent by virtue of, at a minimum, the filing of the Original Complaint on December 11, 2018 and, on information and belief, possessed prior knowledge of the '294 patent by virtue of the prior business dealings between 3Shape and Align and other facts described above.

RESPONSE: Denied.

82. 3Shape also has been and is now actively inducing infringement of one or more claims of the '294 patent, either literally or under the doctrine of equivalents.

RESPONSE: Denied.

83. On information and belief, 3Shape A/S and/or 3Shape TRIOS A/S alone and/or acting in concert with, directing and/or authorizing 3Shape US and/or 3Shape Manufacturing US, LLC to make, use, sell or offer for sale in the United States or import into the United States the TRIOS intraoral scanning systems and Dental System software product (**Exhibit 6; Exhibit 13** at 809:1-810:3, 899:2-24), possesses an affirmative induce infringement by others (**Exhibit 13** at 809:1-810:3, 899:2-24). On information and belief, 3Shape A/S and/or 3Shape TRIOS A/S induces 3Shape US and/or 3Shape Manufacturing US, LLC to infringe (**Exhibits 6-10, 10, 12**).

RESPONSE: Denied.

84. On information and belief, 3Shape US alone and/or acting in concert with, directing and/or authorizing 3Shape A/S, 3Shape TRIOS A/S, and/or 3Shape Manufacturing US, LLC to make, use, sell or offer for sale in the United States or import into the United States the TRIOS intraoral scanning systems and Dental System software product (**Exhibit 6; Exhibit 13** at 809:1-810:3, 899:2-24), possesses an affirmative intent to actively induce infringement by others. (**Exhibits 6-10, 12; Exhibit 13** at 809:1-810:3, 899:2-24.)

RESPONSE: Denied.

85. On information and belief, 3Shape Manufacturing US, LLC alone and/or acting in concert with, directing and/or authorizing 3Shape A/S, 3Shape TRIOS A/S, and/or 3Shape US to make, use, sell or offer for sale in the United States or import into the United States the TRIOS intraoral scanning systems and Dental System software product, possesses an affirmative intent to actively induce infringement by others. On information and belief, 3Shape Manufacturing US, LLC induces 3Shape A/S and/or 3Shape TRIOS A/S and/or 3Shape US to infringe.

RESPONSE: Denied.

86. 3Shape has intended, and continues to intend to induce infringement of the '294 patent by others and has knowledge, with specific intent, that the inducing acts would cause infringement or has been willfully blind to the possibility that its inducing acts would cause the infringing acts. For example, 3Shape is aware that the features claimed in the '294 patent are features in the Dental System software product and are features used by others that purchase the Dental System software product and, therefore, that purchasers and end users will infringe the '294 patent by using the Dental System software product in accordance with the promotional and training material disseminated by 3Shape. 3Shape actively induces infringement of the '294 patent with knowledge and the specific intent to encourage that infringement by, inter alia, disseminating the Dental System software product and providing promotional materials, marketing materials, training materials, instructions, product manuals, user guides, and technical information (including but not limited to the training videos and User Manual described in this Count of the Complaint) to others including, but not limited to, resellers, distributors, customers, dentists, orthodontists, dental and orthodontic labs, and/or other end users of the Dental System software product. Those third parties directly infringe the '294 patent by making, using, selling, offering for sale, and/or importing the TRIOS intraoral scanning systems and Dental System software product.

RESPONSE: Denied.

87. 3Shape also has been and is now contributing to the infringement of one or more claims of the '294 patent, either literally or under the doctrine of equivalents.

RESPONSE: Denied.

88. 3Shape has actively, knowingly, and intentionally contributed and continues to actively, knowingly, and intentionally contribute to the infringement of the '294 patent by having sold or offered to sell and continuing to sell or offer for sale the TRIOS intraoral scanning systems and Dental System software product within in the United States (**Exhibit 6; Exhibit 13** at 809:1-810:3, 899:2-24) and/or by importing the Dental System software product into the United States, with knowledge that the infringing technology in the Dental System software product is especially made and/or especially adapted for use in infringement of the '294 patent (**Exhibit 13** at 894:14-17; 896:18-897:13). 3Shape has contributed to the infringement by others with knowledge that the infringing technology in the Dental System software product is a material part of the patented invention, and with knowledge that the infringing technology in the Dental System software product is not a staple article of commerce suitable for substantial non-infringing use, and with knowledge that others including, but not limited to, resellers, distributors, customers, dentists, orthodontists, dental and orthodontic labs, and/or other end users of the Dental System software product, infringe and will continue to infringe the '294 patent because, due to their specific designs, the accused products and components thereof do not have any substantial non-infringing uses. 3Shape has such knowledge at least because the claimed features of the '294 patent are used by others including, but not limited to, resellers, distributors, customers, dentists, orthodontists, dental and orthodontic labs, and/or other end users of the Dental System software product. (**Exhibits 7, 8.**)

RESPONSE: Denied.

89. On information and belief, 3Shape knew or should have known of the '294 patent and has acted, and continues to act, in an egregious and wanton manner by infringing the '294 patent. On information and belief, 3Shape's infringement of the '294 patent has been and continues to be willful and deliberate. The market for intraoral scanners and related dental and orthodontic software products contains a limited number of competitors, with Align being a known pioneer with whom 3Shape has studied familiarity. The companies have worked together in the past and 3Shape has had ample access to Align's technology. Moreover, 3Shape spent ample time studying Align patents. Upon information and belief, 3Shape knowingly developed and sold its competitive knockoff products in an infringing manner that was known to 3Shape or was so obvious that 3Shape should have known about this infringement.

RESPONSE: Denied.

90. Moreover, at least as of 2017, 3Shape engaged in a "big analysis" of Align's patents. 3Shape engaged in this analysis because it believed it could not use Align's technology until at least 2020. 3Shape was performing a risk assessment of Align's patent portfolio because 3Shape recognized risks in introducing potentially infringing Align's patents. During this assessment, internal concerns at 3Shape were raised about Align's patents. 3Shape continues to make, use, sell, and/or offer for sale the TRIOS intraoral scanning systems, and the TRIOS Software, Dental System and/or Ortho System software in the United States, to import the products into the United States, and to encourage its resellers and others to sell and use the products in the United States, despite being aware of a substantial risk of infringement.

RESPONSE: Denied.

91. On information and belief, despite knowing that its actions constituted infringement of the '294 patent and/or despite knowing that there was a high likelihood that its actions constituted infringement of the patent, 3Shape nevertheless continued its infringing actions, and continues to make, use and sell its infringing products.

RESPONSE: Denied.

92. 3Shape's acts of infringement have injured and damaged Align.

RESPONSE: Denied.

93. 3Shape's wrongful conduct has caused Align to suffer irreparable harm resulting from the loss of its lawful patent rights to exclude others from making, using, selling, offering to sell and importing the patented inventions. Upon information and belief, 3Shape will continue these infringing acts unless enjoined by this Court.

RESPONSE: Denied.

COUNT IV – INFRINGEMENT OF THE '088 PATENT

94. Align incorporates by reference its allegations in Paragraphs 1-93 as if fully restated in this paragraph.

RESPONSE: Defendants restate and reincorporate their responses to paragraphs 1-93 as if fully set forth herein.

95. On information and belief, 3Shape has been and is now directly and/or indirectly infringing, literally and/or under the doctrine of equivalents, the '088 patent by making, using, selling, and/or offering for sale in the United States, and/or importing into the United States, products covered by one or more of the claims of the '088 patent, including the TRIOS 3 and 4 scanners.

RESPONSE: Denied.

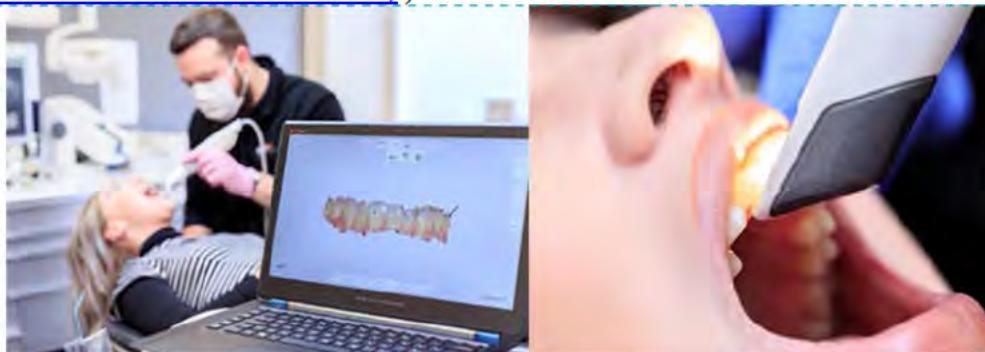
96. The '088 patent is generally directed to performing intraoral scans. Claim 1 of the '088 patent recites an imaging apparatus for performing intraoral scans, comprising: a light source to provide light; an optical system comprising a plurality of lenses disposed along an optical path of the light, wherein the optical system comprises a non-flat focal surface, and wherein the optical system comprises focusing optics to perform focusing of the light onto the non-flat focal surface and to direct the light toward a three dimensional object to be imaged in an oral cavity; a translation mechanism to adjust a location of at least one lens of the plurality of lenses to thereby adjust a focusing setting of the optical system and displace the non-flat focal surface along an imaging axis defined by the optical path, wherein the at least one lens is a lens of the focusing optics, and wherein at least one of a shape or a magnification of the non-flat focal surface changes with changes in the focusing setting; and a detector to measure intensities of returning light that is reflected off of the three dimensional object and directed back through the focusing optics, wherein the intensities of the returning light are to be measured for a plurality of locations of the at least one lens for determination of positions on the imaging axis of a plurality of points of the three dimensional object, wherein detected positions of one or more of the plurality of points are to be adjusted to compensate for the non-flat focal surface using one or more compensation models that provide different adjustments for different focusing settings of the optical system.

RESPONSE: Denied.

97. Upon information and belief, 3Shape's TRIOS 3 and 4 scanners infringe at least claim 1 of the '088 patent. For example, 3Shape's TRIOS 3 and 4 scanners comprise a light source to provide light, as shown in the demonstration video, TRIOS®3 brochure, and press release below.



(See, e.g., **Exhibit 17**, 3Shape TRIOS®3 Digital Impression Scanning (available at: <http://www.dts-international.com/trios3>).)



Field Cod

(Id.)

Be equipped for success with
NEW 3Shape TRIOS innovation



3Shape TRIOS® 4

The most powerful 3Shape intraoral scanner to date!



Caries diagnostic aid*

The world's first intraoral scanner with digital detection of possible surface and interproximal caries** without the need for an additional scanning device.



Smart tips

New generation of tips with instant-heat technology so you are scan-ready in seconds, and enabling 30% additional battery life. Plus a dedicated tip to aid the detection of interproximal caries.**



3Shape TRIOS 3 Basic

The entry-level intraoral scanning solution

- Core award-winning TRIOS scanning technology
- Simple 'scan and send-to' workflow

(See, e.g., **Exhibit 18**, 3Shape TRIOS®3 Digital Impression Solution Brochure (3Shape website, available at: <https://www.3shape.com/en/scanners/trios-3>

<https://embed.widencdn.net/pdf/plus/3shape/9gikyqthjr/3Shape-TRIOS-2019-Brochure-EN.pdf?u=6xmdhr>.)

Field Cod

1. Choose your scanner



TRIOS 4



TRIOS 3
Available in open and handle grips



TRIOS 3 Basic
Available in wired pen version only

2. Choose your connection



Wireless
Options for TRIOS 4 and TRIOS 3



Wired

3. Choose your setup



MOVE



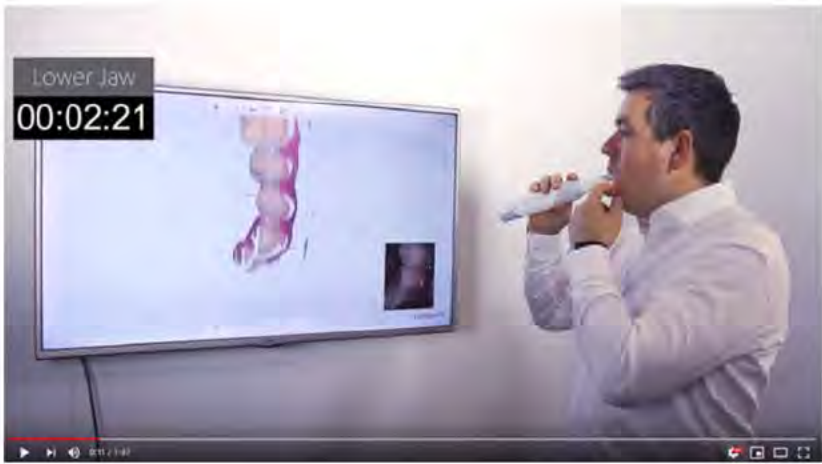
CART
Available with TRIOS 3 Basic and TRIOS 3



POD

	TRIOS 4	TRIOS 3	TRIOS 3 Basic
Scanner operation:			
Wireless	✓	✓	N/A
Autoscan	✓	✓	✓
3Shape accuracy	✓	✓	✓
Real colors and shade measurement	✓	✓	✓
Smart pop	✓	N/A	N/A
Caries diagnostic ad*	✓	N/A	N/A

(Id.)



(See, e.g., **Exhibit 19**, 3Shape TRIOS®3 Video (See 3Shape Trios 3 Wireless Insane Speed in Action, available at: <https://www.youtube.com/watch?v=C5jKnxEyrbU>).

Field Cod



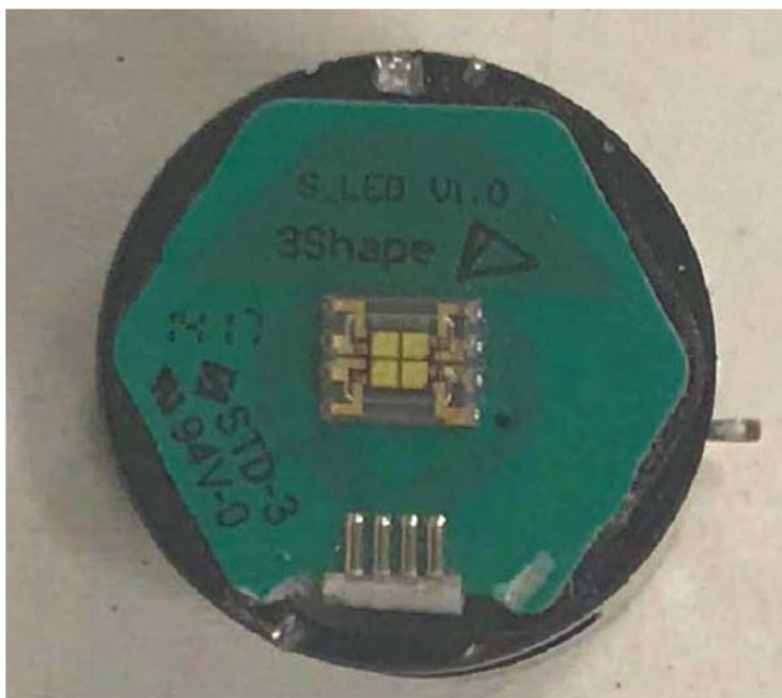
(See, e.g., **Exhibit 20**, 3Shape TRIOS®4 Video (3Shape's Morten Ryde Demonstrates the New 3Shape Trios 4, available at: <https://www.youtube.com/watch?v=IJQNd8Ywc3U>).)

For example, the Accused Devices practice these feature as shown in the screenshots below:

Field Cod



(Showing an example of light being provided from a light source.)



(Showing an example of a light source for providing light.)





(Showing an example of a light source providing light.)

RESPONSE: Denied.

98. For example, 3Shape's TRIOS 3 and 4 scanners include an optical system comprising a plurality of lenses disposed along an optical path of the light, wherein the optical system comprises a non-flat focal surface, and wherein the optical system comprises focusing optics to perform focusing of the light onto the non-flat focal surface and to direct the light toward a three dimensional object to be imaged in an oral cavity, as shown, for example, in the demonstration video, TRIOS®3 brochure, and press release below.





(Showing an example of an optical system comprising a plurality of lenses disposed along an optical path of light.)



(Showing an example of the focusing optics to perform focusing of the light onto the non-flat focal surface and to direct the light toward a three dimensional object to be imaged in an oral cavity.)

RESPONSE: Denied.

99. For example, 3Shape's TRIOS 3 and 4 scanners comprise a translation mechanism to adjust a location of at least one lens of the plurality of lenses to thereby adjust a focusing setting of the optical system and displace the non-flat focal surface along an imaging axis defined by the optical path, wherein the at least one lens is a lens of the focusing optics, and wherein at least one of a shape or a magnification of the non-flat focal surface changes with changes in the focusing setting, as shown, for example, in the pictures below:

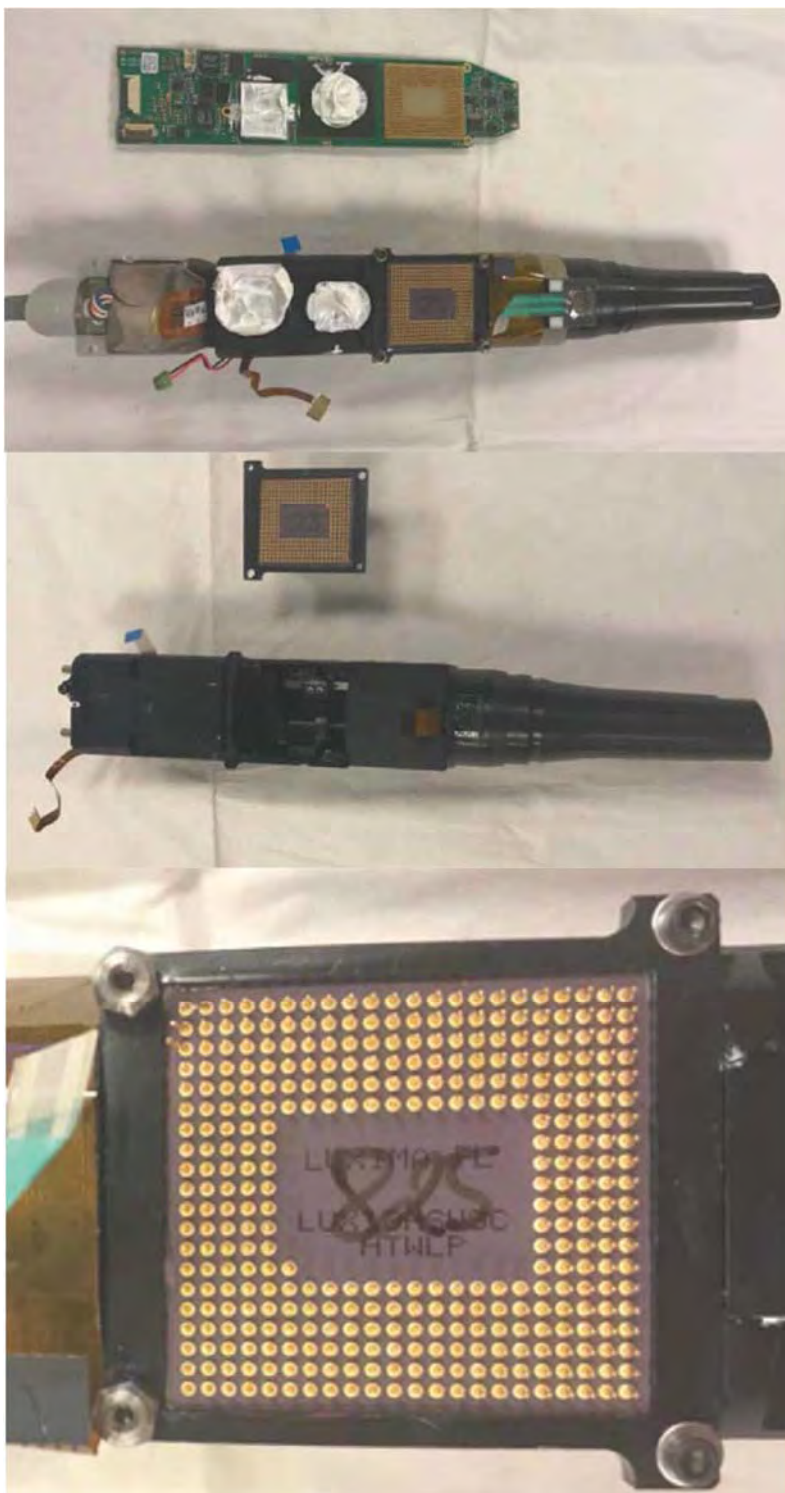


(Showing an example of a translation mechanism to adjust a location of at least one lens of the plurality of lenses within the body of the Trios 3 to thereby adjust a focusing setting of the optical system and to displace the non-flat focal surface along an imaging axis defined by the optical path.)

RESPONSE: Denied.

100. On information and belief, 3Shape's TRIOS 3 and 4 scanners comprise a detector to measure intensities of returning light that is reflected off of the three dimensional object and directed back through the focusing optics, wherein the intensities of the returning light are to be

measured for a plurality of locations of the at least one lens for determination of positions on the imaging axis of a plurality of points of the three dimensional object, wherein detected positions of one or more of the plurality of points are to be adjusted to compensate for the non-flat focal surface using one or more compensation models that provide different adjustments for different focusing settings of the optical system, as shown, for example, in the pictures below:



(Showing a Luxima image sensor, which is an example of a detector to measure intensities of returning light that is reflected off of the three dimensional object and directed back through the focusing optics.) On information and belief, the detected positions of one or more of the plurality of points are to be adjusted to compensate for the non-flat focal surface using one or more compensation models that provide different adjustments for different focusing settings of the optical system.

RESPONSE: Denied.

101. 3Shape possesses knowledge of and is aware of the '088 patent by virtue of, at a minimum, the filing of Align's Motion to Amend Answer, Affirmative Defenses, and Counterclaims (D.I. 69) in CA No. 18-886-LPS 3Shape A/S v. Align Technology, Inc. on December 20, 2019 and, on information and belief, possessed prior knowledge of the '088 patent by virtue of the prior business dealings between 3Shape and Align and other facts described above.

RESPONSE: Denied.

102. 3Shape also has been and is now actively inducing infringement of one or more claims of the '088 patent, either literally or under the doctrine of equivalents.

RESPONSE: Denied.

103. On information and belief, 3Shape alone and/or acting in concert with, directing and/or authorizing 3Shape TRIOS A/S, 3Shape US, and/or 3Shape Manufacturing US, LLC to make, use, sell or offer for sale in the United States or import into the United States the TRIOS 3 and 4 scanners possesses an affirmative intent to actively induce infringement by others.

RESPONSE: Denied.

104. On information and belief, 3Shape Manufacturing US, LLC alone and/or acting in concert with, directing and/or authorizing 3Shape A/S, 3Shape TRIOS A/S, and/or 3Shape US to make, use, sell or offer for sale in the United States or import into the United States the TRIOS 3 and 4 scanners possesses an affirmative intent to actively induce infringement by others. On information and belief, 3Shape Manufacturing US, LLC induces 3Shape A/S and/or 3Shape TRIOS A/S and/or 3Shape US to infringe.

RESPONSE: Denied.

105. On information and belief, 3Shape induces 3Shape TRIOS A/S, 3Shape US, and 3Shape Manufacturing US, LLC to infringe the '088 patent.

RESPONSE: Denied.

106. 3Shape has intended, and continues to intend to induce infringement of the '088 patent by others and has knowledge, with specific intent, that the inducing acts would cause infringement or has been willfully blind to the possibility that its inducing acts would cause the infringing acts. For example, 3Shape is aware that the features claimed in the '088 patent are

features in the TRIOS 3 and 4 scanners and are features used by others that purchase TRIOS 3 and 4 scanners and, therefore, that purchasers and end users will infringe the '088 patent by using the TRIOS 3 and 4 scanners. 3Shape actively induces infringement of the '088 patent with knowledge and the specific intent to encourage that infringement by, inter alia, disseminating the TRIOS 3 and 4 scanners and providing promotional materials, marketing materials, training materials, instructions, product manuals, user guides, and technical information (including but not limited to the demonstration video, brochure, and press release described in this Complaint) to others including, but not limited to, resellers, distributors, customers, dentists, orthodontists, dental and orthodontic labs, and/or other end users of the TRIOS 3 and 4 scanners. Those third parties directly infringe the '088 patent by making, using, selling, offering for sale, and/or importing the TRIOS 3 and 4 scanners.

RESPONSE: Denied.

107. 3Shape also has been and is now contributing to the infringement of one or more claims of the '088 patent, either literally or under the doctrine of equivalents.

RESPONSE: Denied.

108. 3Shape has actively, knowingly, and intentionally contributed and continues to actively, knowingly, and intentionally contribute to the infringement of the '088 patent by having sold or offered to sell and continuing to sell or offer for sale the TRIOS 3 and 4 scanners within in the United States and/or by importing the TRIOS 3 and 4 scanners into the United States, with knowledge that the infringing technology in the TRIOS 3 and 4 scanners is especially made and/or especially adapted for use in infringement of the '088 patent. 3Shape has contributed to the infringement by others with knowledge that the infringing technology in the TRIOS 3 and 4 scanners is a material part of the patented invention, and with knowledge that the infringing technology in the TRIOS 3 and 4 scanners is not a staple article of commerce suitable for substantial non-infringing use, and with knowledge that others including, but not limited to, resellers, distributors, customers, dentists, orthodontists, dental and orthodontic labs, and/or other end users of the TRIOS 3 and 4 scanners infringe and will continue to infringe the '088 patent because, due to their specific designs, the accused products and components thereof do not have any substantial non-infringing uses. 3Shape has such knowledge at least because the claimed features of the '088 patent are used by others including, but not limited to, resellers, distributors, customers, dentists, orthodontists, dental and orthodontic labs, and/or other end users of the TRIOS 3 and 4 scanners.

RESPONSE: Denied.

109. On information and belief, 3Shape knew or should have known of the '088 patent and has acted, and continues to act, in an egregious and wanton manner by infringing '088 patent. On information and belief, 3Shape's infringement of the '088 patent has been and continues to be willful and deliberate. The market for intraoral scanners is small and contains a limited number of competitors, with Align being a known pioneer with whom 3Shape has great familiarity. The companies have worked together in the past and 3Shape has had ample access to Align's technology. Upon information and belief, 3Shape knowingly developed and sold its competitive

knockoff products in an infringing manner that was known to 3Shape or was so obvious that 3Shape should have known about this infringement.

RESPONSE: Denied.

110. On information and belief, despite knowing that its actions constituted infringement of the '088 patent and/or despite knowing that there was a high likelihood that its actions constituted infringement of the patent, 3Shape nevertheless continued its infringing actions, and continues to make, use, and sell its infringing products.

RESPONSE: Denied.

111. 3Shape's acts of infringement have injured and damaged Align. 3Shape's wrongful conduct has caused Align to suffer irreparable harm resulting from the loss of its lawful patent rights to exclude others from making, using, selling, offering to sell and importing the patented inventions. Upon information and belief, 3Shape will continue these infringing acts unless enjoined by this Court.

RESPONSE: Denied.

COUNT V – INFRINGEMENT OF THE '089 PATENT

112. Align incorporates by reference its allegations in Paragraphs 1-111 as if fully restated in this paragraph.

RESPONSE: Defendants restate and reincorporate their responses to paragraphs 1-111 as if fully set forth herein.

113. On information and belief, 3Shape has been and is now directly and/or indirectly infringing, literally and/or under the doctrine of equivalents, the '089 patent by making, using, selling, and/or offering for sale in the United States, and/or importing into the United States, products covered by one or more of the claims of the '089 patent, including the TRIOS 3 and 4 scanners.

RESPONSE: Denied.

114. The '089 patent is generally directed to an imaging apparatus for performing intraoral scans. Claim 9 of the '089 patent recites an imaging apparatus for performing intraoral scans, comprising: a light source to provide light; an optical system comprising a plurality of lenses disposed along an optical path of the light, wherein the optical system comprises focusing optics to perform focusing of the light onto a focal surface and to direct the light toward a three dimensional object to be imaged in an oral cavity; a translation mechanism to adjust a location of at least one lens of the plurality of lenses to displace the focal surface along an imaging axis defined by the optical path, wherein the at least one lens is a lens of the focusing optics, wherein at least one of a shape or a magnification of the focal surface changes with changes in the location of the at least one lens; a detector to generate surface scan data by measuring returning light that is

reflected off of the three dimensional object and directed back through the focusing optics, wherein the returning light is to be measured for a plurality of locations of the at least one lens for determination of depth data for a plurality of points of the three dimensional object, the surface scan data comprising the depth data; and one or more processor to: adjust the depth data for one or more of the plurality of points based at least in part on the location of the at least one lens associated with the depth data using one or more compensation models, wherein the one or more compensation models compensate for changes in magnification associated with different locations of the at least one lens, and wherein the one or more compensation models provide different adjustments to the depth data for the one or more of the plurality of points for the different locations of the at least one lens; and generate a three-dimensional virtual model using the adjusted depth data.

RESPONSE: Denied.

115. Upon information and belief, 3Shape's TRIOS 3 and 4 scanners infringe at least claim 9 of the '089 patent. For example, 3Shape's TRIOS 3 and 4 scanners comprise a light source to provide light, as shown, for example, in the demonstration video, TRIOS®3 brochure, and press release below:



(See, e.g., **Exhibit 17**, 3Shape TRIOS®3 Digital Impression Scanning (available at: <http://www.dts-international.com/trios3>).)

Field Cod



(Id.)

Be equipped for success with
NEW 3Shape TRIOS innovation



3Shape TRIOS® 4

The most powerful 3Shape intraoral scanner to date!



Caries diagnostic aid*

The world's first intraoral scanner with digital detection of possible surface and interproximal caries** without the need for an additional scanning device.



Smart tips

New generation of tips with instant heat technology so you are scan-ready in seconds, and enabling 30% additional battery life. Plus a dedicated tip to aid the detection of interproximal caries.**



3Shape TRIOS 3 Basic

The entry-level intraoral scanning solution

- > Core award-winning TRIOS scanning technology
- > Simple 'scan and send-to' workflow

(See, e.g., **Exhibit 18**, 3Shape TRIOS®3 Digital Impression Solution Brochure (3Shape website, available at: <https://www.3shape.com/en/scanners/trios-3>

<https://embed.widencdn.net/pdf/plus/3shape/9gikyqthjr/3Shape-TRIOS-2019-Brochure-EN.pdf?u=6xmdhr>.)

Field Cod

1. Choose your scanner



TRIOS 4



TRIOS 3
Available in open and handle grips



TRIOS 3 Basic
Available in wired pen version only

2. Choose your connection



Wireless
Options for TRIOS 4 and TRIOS 3



Wired

3. Choose your setup



MOVE



CART
Available with TRIOS 3 Basic and TRIOS 3



POD

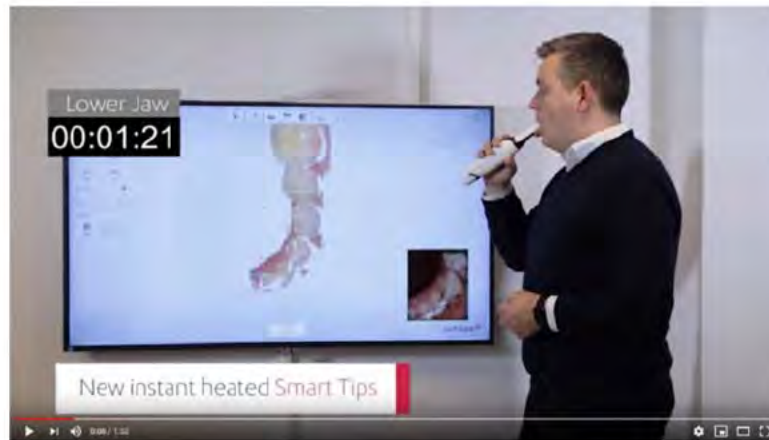
	TRIOS 4	TRIOS 3	TRIOS 3 Basic
Scanner operation:			
Wireless	✓	✓	N/A
Autoscan	✓	✓	✓
3Shape accuracy	✓	✓	✓
Real colors and shade measurement	✓	✓	✓
Smart pop	✓	N/A	N/A
Caries diagnostic ad*	✓	N/A	N/A

(Id.)



(See, e.g., **Exhibit 19**, 3Shape TRIOS®3 Video (See 3Shape Trios 3 Wireless Insane Speed in Action, available at: <https://www.youtube.com/watch?v=C5jKnxEyrbU>).

Field Cod



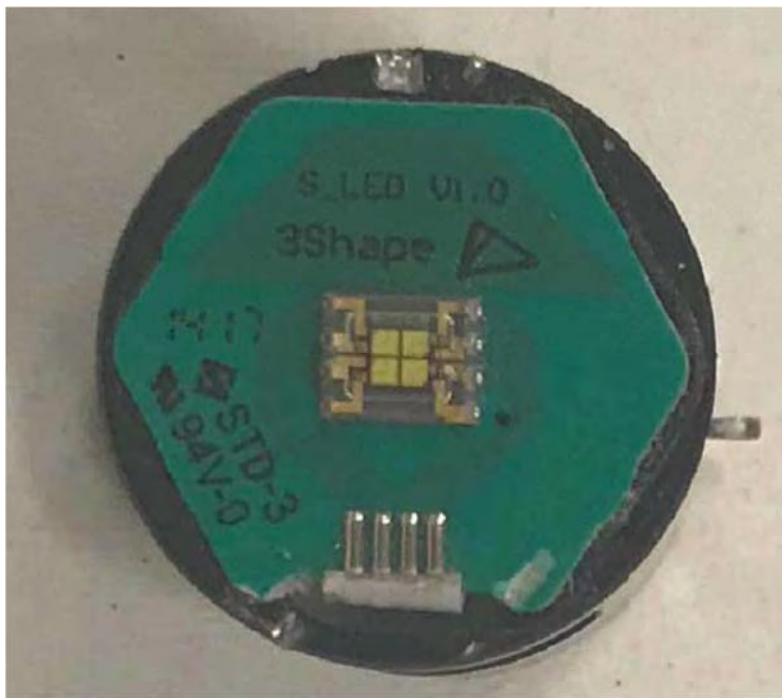
(See, e.g., **Exhibit 20**, 3Shape TRIOS®4 Video (3Shape's Morten Ryde Demonstrates the New 3Shape Trios 4, available at: <https://www.youtube.com/watch?v=IJQNd8Ywc3U>).)

For example, the Accused Devices practice these feature as shown in the screenshots below:

Field Cod



(Showing an example of a light source for providing light.)



(Showing an example of a light source for providing light.)





(Showing an example of light provided by a light source in the Trios.)

RESPONSE: Denied.

116. For example, 3Shape's TRIOS 3 and 4 scanners comprise an optical system comprising a plurality of lenses disposed along an optical path of the light, wherein the optical system comprises focusing optics to perform focusing of the light onto a focal surface and to direct the light toward a three dimensional object to be imaged in an oral cavity, as shown, for example, in the pictures below:





(Showing an example of an optical system comprising a plurality of lenses disposed along an optical path, including focusing optics.)



(Showing an example of the focusing optics to perform focusing of the light onto a focal surface and to direct the light toward a three dimensional object to be imaged in an oral cavity.)

RESPONSE: Denied.

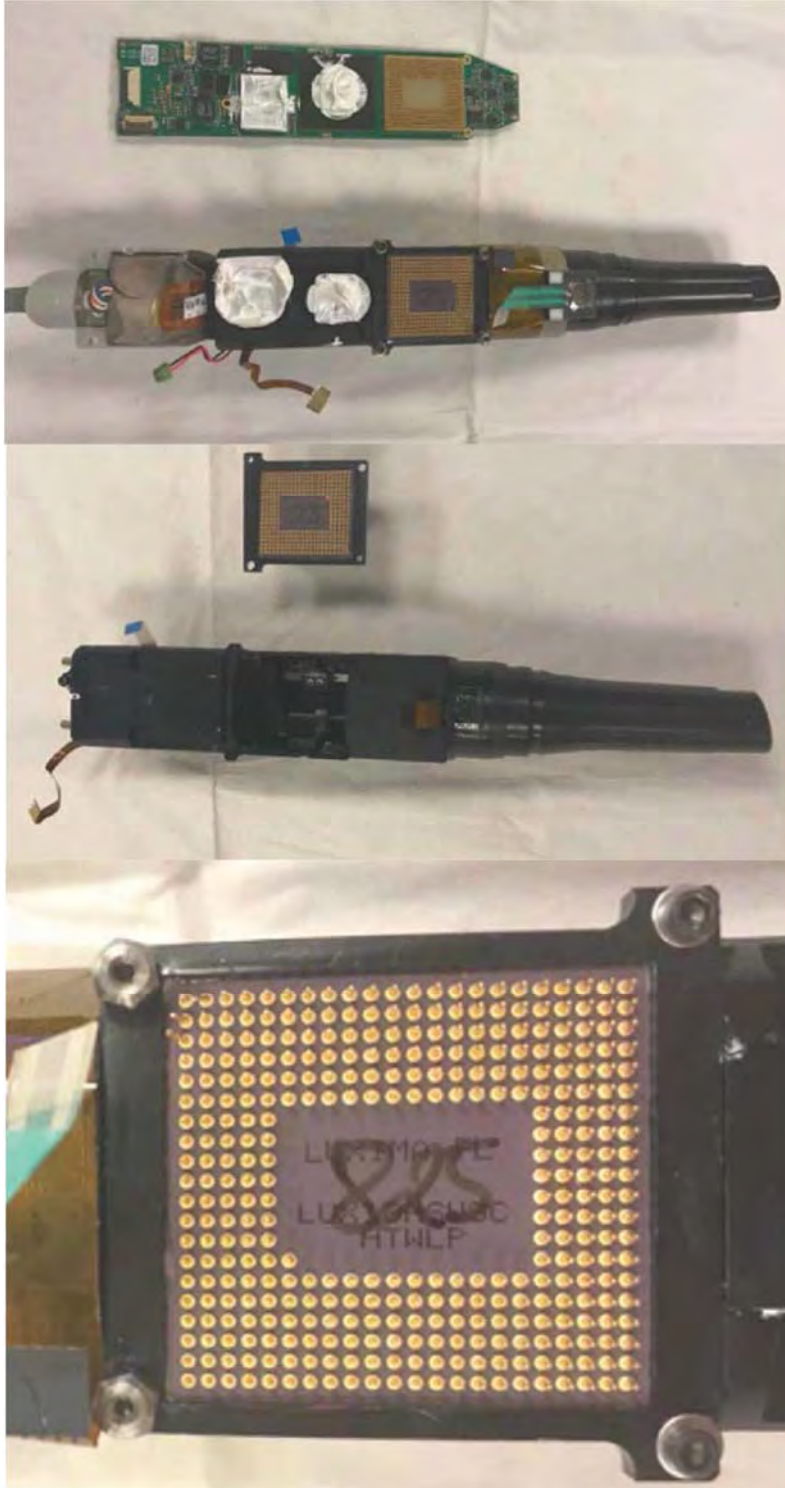
117. For example, 3Shape's TRIOS 3 and 4 scanners comprise a translation mechanism to adjust a location of at least one lens of the plurality of lenses to displace the focal surface along an imaging axis defined by the optical path, wherein the at least one lens is a lens of the focusing optics, wherein at least one of a shape or a magnification of the focal surface changes with changes in the location of the at least one lens, as shown, for example, in the pictures below:



(Showing an example of a translation mechanism to adjust a location of at least one lens of the plurality of lenses within the body of the Trios 3 to displace the focal surface along an imaging axis defined by the optical path.) On information and belief, at least one of a shape or a magnification of the focal surface changes with changes in the location of the at least one lens.

RESPONSE: Denied.

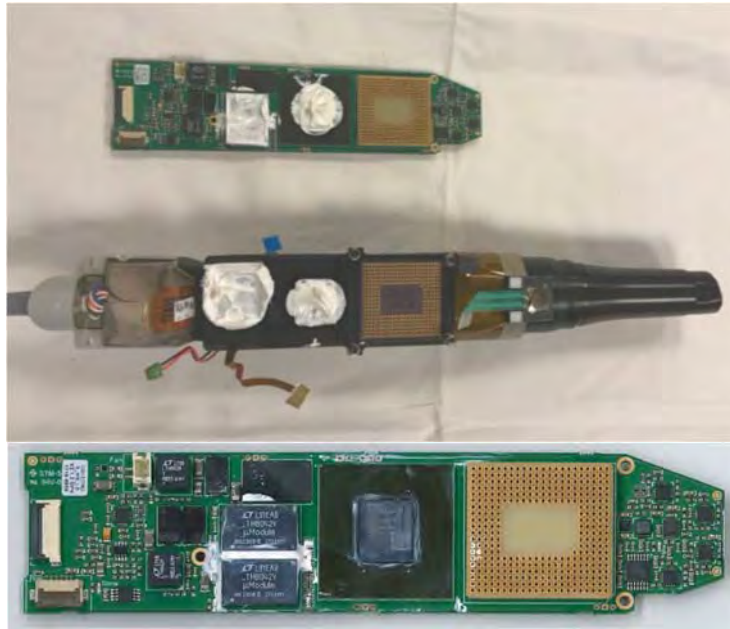
118. For example, 3Shape's TRIOS 3 and 4 scanners comprise a detector to generate surface scan data by measuring returning light that is reflected off of the three dimensional object and directed back through the focusing optics, wherein the returning light is to be measured for a plurality of locations of the at least one lens for determination of depth data for a plurality of points of the three dimensional object, the surface scan data comprising the depth data, as shown, for example, in the pictures below:



(Showing a Luxima image sensor, which is an example of a detector for measuring returning light that is reflected off of the three dimensional object.) On information and belief, the detector generates surface scan data by measuring returning light for a plurality of locations of the at least one lens for determination of depth data for a plurality of points of the three dimensional object. On information and belief, the surface scan data comprises depth data.

RESPONSE: Denied.

119. For example, 3Shape's TRIOS 3 and 4 scanners comprise one or more processor to: adjust the depth data for one or more of the plurality of points based at least in part on the location of the at least one lens associated with the depth data using one or more compensation models, wherein the one or more compensation models compensate for changes in magnification associated with different locations of the at least one lens, and wherein the one or more compensation models provide different adjustments to the depth data for the one or more of the plurality of points for the different locations of the at least one lens; and generate a three-dimensional virtual model using the adjusted depth data.





(Showing an Artix-7, which includes a FPGA processor used to adjust the depth data for one or more of the plurality of points based at least in part on the location of the at least one lens associated with the depth data using one or more compensation models.)

Artix-7 Product Advantage

Artix®-7 devices provide the highest performance-per-watt fabric, transceiver line rates, DSP processing, and AMS integration in a cost-optimized FPGA. Featuring the MicroBlaze™ soft processor and 1,066Mb/s DDR3 support, the family is the best value for a variety of cost and power-sensitive applications including software-defined radio, machine vision cameras, and low-end wireless backhaul.

(See, e.g., **Exhibit 21**, <https://www.xilinx.com/products/silicon-devices/fpga/artix-7.html>.) On information and belief, the one or more compensation models compensate for changes in magnification associated with different locations of the at least one lens. On information and belief, the one or more compensation models provide different adjustments to the depth data for the one or more of the plurality of points for the different locations of the at least one lens. On information and belief, the processor generates a three-dimensional virtual model using the adjusted depth data.

RESPONSE: Denied.

120. 3Shape possesses knowledge of and is aware of the '089 patent by virtue of, at a minimum, the filing of Align's Motion to Amend Answer, Affirmative Defenses, and Counterclaims (D.I. 69) in 3Shape A/S v. Align Technology, Inc., CA No. 18-886-LPS, on December 20, 2019 and, on information and belief, possessed prior knowledge of the '089 patent by virtue of the prior business dealings between 3Shape and Align and other facts described above.

RESPONSE: Denied.

121. 3Shape also has been and is now actively inducing infringement of one or more claims of the '089 patent, either literally or under the doctrine of equivalents.

RESPONSE: Denied.

122. On information and belief, 3Shape alone and/or acting in concert with, directing and/or authorizing 3Shape TRIOS A/S, 3Shape US, and/or 3Shape Manufacturing US, LLC to make, use, sell or offer for sale in the United States or import into the United States the TRIOS 3 and 4 scanners possesses an affirmative intent to actively induce infringement by others.

RESPONSE: Denied.

123. On information and belief, 3Shape Manufacturing US, LLC alone and/or acting in concert with, directing and/or authorizing 3Shape A/S, 3Shape TRIOS A/S, and/or 3Shape US to make, use, sell or offer for sale in the United States or import into the United States the TRIOS 3 and 4 scanners possesses an affirmative intent to actively induce infringement by others. On information and belief, 3Shape Manufacturing US, LLC induces 3Shape A/S and/or 3Shape TRIOS A/S and/or 3Shape US to infringe.

RESPONSE: Denied.

124. On information and belief, 3Shape induces 3Shape TRIOS A/S, 3Shape US, and 3Shape Manufacturing US, LLC to infringe the '089 patent.

RESPONSE: Denied.

125. 3Shape has intended, and continues to intend to induce infringement of the '089 patent by others and has knowledge, with specific intent, that the inducing acts would cause infringement or has been willfully blind to the possibility that its inducing acts would cause the infringing acts. For example, 3Shape is aware that the features claimed in the '089 patent are features in the TRIOS 3 and 4 scanners and are features used by others that purchase TRIOS 3 and 4 scanners and, therefore, that purchasers and end users will infringe the '089 patent by using the TRIOS scanners. 3Shape actively induces infringement of the '089 patent with knowledge and the specific intent to encourage that infringement by, inter alia, disseminating the TRIOS scanners and providing promotional materials, marketing materials, training materials, instructions, product manuals, user guides, and technical information (including but not limited to the demonstration video, brochure, and press release described in this Complaint) to others including, but not limited to, resellers, distributors, customers, dentists, orthodontists, dental and orthodontic labs, and/or other end users of the TRIOS 3 and 4 scanners. Those third parties directly infringe the '089 patent by making, using, selling, offering for sale, and/or importing the TRIOS 3 and 4 scanners.

RESPONSE: Denied.

126. 3Shape also has been and is now contributing to the infringement of one or more claims of the '089 patent, either literally or under the doctrine of equivalents.

RESPONSE: Denied.

127. 3Shape has actively, knowingly, and intentionally contributed and continues to actively, knowingly, and intentionally contribute to the infringement of the '089 patent by having sold or offered to sell and continuing to sell or offer for sale the TRIOS 3 and 4 scanners within in the United States and/or by importing the TRIOS 3 and 4 scanners into the United States, with knowledge that the infringing technology in the TRIOS 3 and 4 scanners is especially made and/or especially adapted for use in infringement of the '089 patent. 3Shape has contributed to the infringement by others with knowledge that the infringing technology in the TRIOS 3 and 4 scanners is a material part of the patented invention, and with knowledge that the infringing technology in the TRIOS 3 and 4 scanners is not a staple article of commerce suitable for substantial non-infringing use, and with knowledge that others including, but not limited to, resellers, distributors, customers, dentists, orthodontists, dental and orthodontic labs, and/or other end users of the TRIOS 3 and 4 scanners infringe and will continue to infringe the '430 patent because, due to their specific designs, the accused products and components thereof do not have any substantial non-infringing uses. 3Shape has such knowledge at least because the claimed features of the '089 patent are used by others including, but not limited to, resellers, distributors, customers, dentists, orthodontists, dental and orthodontic labs, and/or other end users of the TRIOS 3 and 4 scanners.

RESPONSE: Denied.

128. On information and belief, 3Shape knew or should have known of the '089 patent and has acted, and continues to act, in an egregious and wanton manner by infringing '089 patent. On information and belief, 3Shape's infringement of the '089 patent has been and continues to be willful and deliberate. The market for intraoral scanners is small and contains a limited number of competitors, with Align being a known pioneer with whom 3Shape has great familiarity. The companies have worked together in the past and 3Shape has had ample access to Align's technology. Upon information and belief, 3Shape knowingly developed and sold its competitive knockoff products in an infringing manner that was known to 3Shape or was so obvious that 3Shape should have known about this infringement.

RESPONSE: Denied.

129. On information and belief, despite knowing that its actions constituted infringement of the '089 patent and/or despite knowing that that there was a high likelihood that its actions constituted infringement of the patent, 3Shape nevertheless continued its infringing actions, and continues to make, use, and sell its infringing products.

RESPONSE: Denied.

130. 3Shape's acts of infringement have injured and damaged Align. 3Shape's wrongful conduct has caused Align to suffer irreparable harm resulting from the loss of its lawful patent rights to exclude others from making, using, selling, offering to sell and importing the patented inventions. Upon information and belief, 3Shape will continue these infringing acts unless enjoined by this Court.

RESPONSE: Denied.

PRAYER FOR RELIEF

Defendants deny that Plaintiff is entitled to any of the relief requested by the Amended Complaint, or any other remedy or relief whatsoever.

AFFIRMATIVE DEFENSES

Without any admission as to burden of proof, burden of persuasion, or the truth of any of the allegations in Plaintiff's Amended Complaint, Defendants state the following affirmative defenses. Defendants reserve the right to assert additional defenses, as warranted by the facts learned through investigation and discovery.

First Affirmative Defense
(Invalidity of U.S. Patent No. 9,844,420)

One or more claims of the '420 patent are invalid for failure to comply with one or more of the requirements for patentability set forth in Title 35 of the U.S. Code, including §§ 101, 102, 103, and 112, and/or invalid under any other ground provided by 35 U.S.C. § 282, and/or based on other judicially-created bases for invalidity.

Second Affirmative Defense
(Non-Infringement of U.S. Patent No. 9,844,420)

Plaintiff has failed to aver any facts that support its allegations of infringement by the accused products. The accused products do not infringe any valid and enforceable claim of the '420 patent, either literally or under the doctrine of equivalents.

Third Affirmative Defense
(Invalidity of U.S. Patent No. 9,675,430)

One or more claims of the '430 patent are invalid for failure to comply with one or more of the requirements for patentability set forth in Title 35 of the U.S. Code, including §§ 101, 102, 103, and 112, and/or invalid under any other ground provided by 35 U.S.C. § 282, and/or based on other judicially-created bases for invalidity.

Fourth Affirmative Defense
(Non-Infringement of U.S. Patent No. 9,675,430)

Plaintiff has failed to aver any facts that support its allegations of infringement by the accused products. The accused products do not infringe any valid and enforceable claim of the '430 patent, either literally or under the doctrine of equivalents.

Fifth Affirmative Defense
(Invalidity of U.S. Patent No. 9,975,294)

One or more claims of the '294 patent are invalid for failure to comply with one or more of the requirements for patentability set forth in Title 35 of the U.S. Code, including §§ 101, 102, 103, and 112, and/or invalid under any other ground provided by 35 U.S.C. § 282, and/or based on other judicially-created bases for invalidity.

Sixth Affirmative Defense
(Non-Infringement of U.S. Patent No. 9,975,294)

Plaintiff has failed to aver any facts that support its allegations of infringement by the accused products. The accused products do not infringe any valid and enforceable claim of the '294 patent, either literally or under the doctrine of equivalents.

Seventh Affirmative Defense
(Invalidity of U.S. Patent No. 10,507,088)

One or more claims of the '088 patent are invalid for failure to comply with one or more of the requirements for patentability set forth in Title 35 of the U.S. Code, including §§ 101, 102, 103, and 112, and/or invalid under any other ground provided by 35 U.S.C. § 282, and/or based on other judicially-created bases for invalidity.

Eighth Affirmative Defense
(Non-Infringement of U.S. Patent No. 10,507,088)

Plaintiff has failed to aver any facts that support its allegations of infringement by the accused products. The accused products do not infringe any valid and enforceable claim of the '088 patent, either literally or under the doctrine of equivalents.

Ninth Affirmative Defense
(Invalidity of U.S. Patent No. 10,507,089)

One or more claims of the '089 patent are invalid for failure to comply with one or more of the requirements for patentability set forth in Title 35 of the U.S. Code, including §§ 101, 102, 103, and 112, and/or invalid under any other ground provided by 35 U.S.C. § 282, and/or based on other judicially-created bases for invalidity.

Tenth Affirmative Defense
(Non-Infringement of U.S. Patent No. 10,507,089)

Plaintiff has failed to aver any facts that support its allegations of infringement by the accused products. The accused products do not infringe any valid and enforceable claim of the '089 patent, either literally or under the doctrine of equivalents.

Eleventh Affirmative Defense
(Prosecution History Estoppel)

Plaintiff is estopped from arguing and has waived arguments that the claims of the '420, '430, '294, '088, and '089 patents cover the products described by virtue of amendments, positions, and arguments made to the USPTO when obtaining the patents-in-suit.

Twelfth Affirmative Defense
(Failure to State a Claim)

Plaintiff's Amended Complaint fails to state a claim upon which relief can be granted.

Thirteenth Affirmative Defense
(Lack of Standing)

Plaintiff does not have standing to assert claims for patent infringement under 35 U.S.C. § 271.

Fourteenth Affirmative Defense
(Equitable Estoppel, Laches, Waiver, Acquiescence, and/or Unclean Hands)

Plaintiff's claims for relief are barred by the doctrines of waiver, laches, acquiescence, unclean hands, and/or estoppel with respect to the '420, '430, '294, '088, and '089 patents because Plaintiff misled 3Shape as to Plaintiff's intent not to enforce these patents against 3Shape after it learned, or through reasonable diligence should have learned, of its causes of action against 3Shape, and since such time 3Shape has expended substantial amounts of time, money, and effort to build its business, brand, and recognition of its name and products.

Fifteenth Affirmative Defense
(Covenant Not to Sue)

Plaintiff has covenanted not to sue 3Shape on the patents-in-suit.

Sixteenth Affirmative Defense
(License)

Plaintiff's claims for relief are barred with respect to the '420, '430, '294, '088, and '089 patents to the extent the accused 3Shape products are expressly or impliedly licensed under these patents.

Seventeenth Affirmative Defense
(Patent Misuse)

Plaintiff's claims are barred, in whole or in part, by the doctrine of patent misuse.

Eighteenth Affirmative Defense
(Limitations on Damages)

Plaintiff is not entitled to damages on the sale of TRIOS and TRIOS 3 scanners as Plaintiff has represented that the patents-in-suit are applicable to software and not hardware.

Nineteenth Affirmative Defense
(Additional Defenses or Counterclaims)

Defendants reserve all defenses available under the Federal Rules of Civil Procedure and the U.S. Patent laws and any additional defenses or counterclaims that discovery may reveal, including that Plaintiff has failed to aver any facts supporting the conclusion that they have suffered any irreparable injury or harm under 35 U.S.C. § 283, and that Plaintiff has failed to aver any facts supporting that this is an exceptional case and/or that it is entitled to an award of attorney's fees under 35 U.S.C. § 285.

WHEREFORE, Defendants request that Plaintiff's Amended Complaint be dismissed with prejudice and that Defendants be awarded the costs of this action, its attorneys' fees, and all other relief that this Court deems just and proper.

COUNTERCLAIMS

For their counterclaims against Counterclaim-Defendant Align Technology, Inc. ("Counterclaim-Defendant" or "Align"), Counterclaim-Plaintiffs 3Shape A/S, 3Shape Trios A/S, and 3Shape, Inc. (collectively "Counterclaim-Plaintiffs" or "3Shape"), state as follows:

PARTIES

1. Counterclaim-Plaintiff 3Shape A/S ("3Shape A/S") is a Danish corporation with principal place of business at Holmens Kanal 7, 1060 Copenhagen K, Denmark.
2. Counterclaim-Plaintiff 3Shape Trios A/S ("3Shape Trios A/S") is a Danish corporation with principal place of business at Holmens Kanal 7, 1060 Copenhagen K, Denmark.
3. Counterclaim-Plaintiff 3Shape Inc. is a Delaware corporation with a principal place of business at 10 Independence Boulevard, Suite 150, Warren, New Jersey 07059.
4. Upon information and belief, Counterclaim-Defendant Align Technology Inc. ("Align") is a Delaware corporation with its principal place of business in San Jose, California.

JURISDICTION AND VENUE

5. Counterclaim-Plaintiffs' counterclaims arise under the Patent Laws of the United States, 35 U.S.C. § 1 *et seq.*, and the Declaratory Judgment Act, 28 U.S.C. §§ 2201 and 2202.

6. This Court has original jurisdiction over the subject matter of these counterclaims pursuant to 28 U.S.C. §§ 1331, 1338, 2201, and 2202.

7. This Court has personal jurisdiction over Counterclaim-Defendant because Counterclaim-Defendant has availed itself of the rights and privileges of this forum by bringing this civil action in this judicial district and because, upon information and belief, Counterclaim-Defendant conducts substantial business in, and has regular and systematic contact with, this judicial district.

8. Venue for these counterclaims is proper in this judicial district pursuant to 28 U.S.C. §§ 1391(b) and (c) and 1400(b).

FACTUAL BACKGROUND

9. 3Shape is a pioneer developer of dental equipment and software for use by dental professionals and laboratories since 2004. In particular, 3Shape TRIOS A/S, a sister company of 3Shape A/S and 3Shape Inc., designs, develops, manufactures, and sells Trios, the first color, wireless intraoral full mouth scanner in the industry, and related software products. The Trios system can be used for scanning, designing, and ordering of clear aligners and a number of other orthodontic treatments or dental products.

10. Trios has been named the best intraoral scanner by the industry for five years in a row. Trios was also named the most accurate intraoral scanner in an independent American Dental Association study.

11. Trios has numerous operational advantages for dental professionals as well. The most important is that Trios is an open system scanner, integrated with many different providers

of restorative products and orthodontic treatments. Dental professionals can send scans directly from Trios to any provider that accepts STL files, the open industry standard file format. Trios's open system provides patients and dental professionals freedom of choice and access to an open market for dental and orthodontic treatments.

12. 3Shape A/S sells and licenses certain software in the United States, including Ortho Analyzer, Ortho Planner, Dental System, and Appliance Designer.

13. 3Shape Inc. provides marketing services for 3Shape's products and supports 3Shape's third party U.S. resellers/distributors.

14. On or about December 31, 2015, Align and 3Shape entered into the Scanner Agreement to promote interoperability between 3Shape's Trios and Trios 3 intraoral scanners and related software and technology and Align's Invisalign clear aligner workflows.

15. Align terminated the Scanner Agreement in December 2017.

16. The TRIOS, TRIOS 3, and TRIOS 4 scanners do not infringe any valid claim of any Align asserted patent, including the '420, '430, '294, '088, and '089 patents.

17. Each of the patents-in-suit is invalid.

COUNT I
(Declaratory Judgment of Invalidity of the '420 Patent)

18. Counterclaim-Plaintiffs restate and reallege each of the foregoing paragraphs 1-17 of the Counterclaims as if fully set forth herein.

19. 3Shape is entitled to a declaration that the asserted claims of the '420 patent are invalid pursuant to at least 35 U.S.C. §§ 101, 102, 103, and 112.

COUNT II
(Declaratory Judgment of Non-Infringement of the '420 Patent)

20. Counterclaim-Plaintiffs restate and reallege each of the foregoing paragraphs 1-19 of the Counterclaims as if fully set forth herein.

21. 3Shape is entitled to a declaration that it does not infringe the asserted claims of the '420 patent.

COUNT III
(Declaratory Judgment of Invalidity of the '430 Patent)

22. Counterclaim-Plaintiffs restate and reallege each of the foregoing paragraphs 1-21 of the Counterclaims as if fully set forth herein.

23. 3Shape is entitled to a declaration that the asserted claims of the '430 patent are invalid pursuant to at least 35 U.S.C. §§ 101, 102, 103, and 112.

COUNT IV
(Declaratory Judgment of Non-Infringement of the '430 Patent)

24. Counterclaim-Plaintiffs restate and reallege each of the foregoing paragraphs 1-23 of the Counterclaims as if fully set forth herein.

25. 3Shape is entitled to a declaration that it does not infringe the asserted claims of the '430 patent.

COUNT V
(Declaratory Judgment of Invalidity of the '294 Patent)

26. Counterclaim-Plaintiffs restate and reallege each of the foregoing paragraphs 1-25 of the Counterclaims as if fully set forth herein.

27. 3Shape is entitled to a declaration that the asserted claims of the '294 patent are invalid pursuant to at least 35 U.S.C. §§ 101, 102, 103, and 112.

COUNT VI
(Declaratory Judgment of Non-Infringement of the '294 Patent)

28. Counterclaim-Plaintiffs restate and reallege each of the foregoing paragraphs 1-27 of the Counterclaims as if fully set forth herein.

29. Shape is entitled to a declaration that it does not infringe the asserted claims of the '294 patent.

COUNT VII
(Declaratory Judgment of Invalidity of the '088 Patent)

30. Counterclaim-Plaintiffs restate and reallege each of the foregoing paragraphs 1-29 of the Counterclaims as if fully set forth herein.

31. 3Shape is entitled to a declaration that the asserted claims of the '088 patent are invalid pursuant to at least 35 U.S.C. §§ 101, 102, 103, and 112.

COUNT VIII
(Declaratory Judgment of Non-Infringement of the '088 Patent)

32. Counterclaim-Plaintiffs restate and reallege each of the foregoing paragraphs 1-31 of the Counterclaims as if fully set forth herein.

33. Shape is entitled to a declaration that it does not infringe the asserted claims of the '088 patent.

COUNT IX
(Declaratory Judgment of Invalidity of the '089 Patent)

34. Counterclaim-Plaintiffs restate and reallege each of the foregoing paragraphs 1-33 of the Counterclaims as if fully set forth herein.

35. 3Shape is entitled to a declaration that the asserted claims of the '089 patent are invalid pursuant to at least 35 U.S.C. §§ 101, 102, 103, and 112.

COUNT X
(Declaratory Judgment of Non-Infringement of the '089 Patent)

36. Counterclaim-Plaintiffs restate and reallege each of the foregoing paragraphs 1-35 of the Counterclaims as if fully set forth herein.

37. Shape is entitled to a declaration that it does not infringe the asserted claims of the '089 patent.

COUNT XI
(Unjust Enrichment)

38. Counterclaim-Plaintiffs restate and reallege each of the foregoing paragraphs 1-37 of the Counterclaims as if fully set forth herein.

39. 3Shape conferred a benefit on Align by allowing interoperability between 3Shape's Trios intraoral scanner and Align's Invisalign workflow.

40. Align accepted and unjustly retained this benefit, and exploited this benefit to gain access to 3Shape's Trios end user's information without 3Shape's permission.

41. Align has been and continues to be unjustly enriched by its wrongful conduct. For example, Align has made wrongful use of 3Shape's end user information and has derived an unjust benefit from commercially exploiting this information to 3Shape's detriment.

COUNT XII
(Common Law Tortious Interference with Prospective Business Relations)

42. Counterclaim-Plaintiffs restate and reallege each of the foregoing paragraphs 1-41 of the Counterclaims as if fully set forth herein.

43. 3Shape had a reasonable probability and expectancy of retaining its Trios customers.

44. On information and belief, using confidential information obtained during the Trios to Invisalign interface, Align identified Trios owners and intentionally and wrongfully

interfered with 3Shape's business relationships by targeting and offering 3Shape's customers significant discounts on Align's iTero scanner, with the intent to poach 3Shape customers.

45. By virtue of Align's tortious interference, at least some Trios owners purchased iTero, causing 3Shape both monetary and non-monetary damages.

COUNT XIII
(Unfair Competition)

46. Counterclaim-Plaintiffs restate and reallege each of the foregoing paragraphs 1-45 of the Counterclaims as if set forth fully herein.

47. 3Shape had a reasonable probability and expectancy of retaining its Trios customers.

48. On information and belief, using confidential information obtained during the Trios to Invisalign interface, Align identified Trios owners and intentionally and wrongfully interfered with 3Shape's business relationships by targeting and offering 3Shape's customers significant discounts on Align's iTero scanner with the intent to poach 3Shape customers.

49. By virtue of Align's tortious interference, at least some Trios owners purchased iTero, causing 3Shape both monetary and non-monetary damages.

50. Align's actions constitute common law unfair competition.

51. Align's acts have caused irreparable injury and damage to 3Shape for which 3Shape has no adequate remedy at law.

PRAYER FOR RELIEF

WHEREFORE, Counterclaim-Plaintiffs respectfully request that this Court enter a judgment in their favor and against Counterclaim-Defendant as follows:

- A. Dismissing the Amended Complaint with prejudice and entering judgment for Counterclaim-Plaintiffs;
- B. Declaring that the claims of the '420 patent are invalid and/or not infringed;
- C. Declaring that the claims of the '430 patent are invalid and/or not infringed;
- D. Declaring that the claims of the '294 patent are invalid and/or not infringed;
- E. Declaring that the claims of the '088 patent are invalid and/or not infringed;
- F. Declaring that the claims of the '089 patent are invalid and/or not infringed;
- G. Awarding Counterclaim-Plaintiffs the damages to which they are entitled by virtue of Counterclaim-Defendant's tortious conduct, unjust enrichment, and other unfair competition;
- H. Permanently enjoining Counterclaim-Defendant's tortious conduct, unjust enrichment, and other unfair competition;
- I. Awarding Counterclaim-Plaintiffs their reasonable attorneys' fees, costs, and expenses incurred in this action; and
- J. Awarding any such other and further relief as this Court may deem proper.

OF COUNSEL:

Goutam Patnaik (*pro hac vice*)
David J. Shaw (*pro hac vice*)
Tuhin Ganguly (*pro hac vice*)
Kimberly E. Coghill (*pro hac vice*)
PEPPER HAMILTON LLP
2000 K Street, N.W., Suite 600
Washington, D.C. 20006-1865
Tel: 202.220.1200

Respectfully submitted,

/s/ James H. S. Levine
Joanna J. Cline (DE Bar No. 5873)
James H. S. Levine (DE Bar No. 5355)
PEPPER HAMILTON LLP
Hercules Plaza 131
North Market Street
Suite 5100
Wilmington, DE 19899-1709

Fax: 202.220.1465
Email: shawd@pepperlaw.com

William Belanger (*pro hac vice*)
Alison McCarthy (*pro hac vice*)
PEPPER HAMILTON LLP
125 High Street, 19th Floor High Street Tower
Boston, Massachusetts 02110-2736
Tel: 617.204.5100
Fax: 617.204.5150
Email: belangew@pepperlaw.com

Telephone: 302.777.6500
Fax: 302.421.8390
Email: clinej@pepperlaw.com
levinejh@pepperlaw.com

*Attorney for Defendants 3Shape A/S, 3Shape
Trios A/S, 3Shape Inc., and 3Shape
Manufacturing US, LLC*

DATED: June 1, 2020

CERTIFICATE OF SERVICE

I hereby certify that on June 1, 2020, the foregoing 3SHAPE A/S, 3SHAPE TRIOS A/S, AND 3SHAPE, INC.'S ANSWER, AFFIRMATIVE DEFENSES, AND COUNTERCLAIMS TO THE SECOND AMENDED COMPLAINT was electronically filed via *CM/ECF*, which will give notice to all counsel of record.

/s/ James H. S. Levine

James H. S. Levine (Del. Bar No. 5355)